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ABSTRACT

Learner perceptions of online learning were examined in a study of the views of learners enrolled in online vocational education and training (VET) courses across Australia. Data were collected from the following sources: an online questionnaire completed by 356 students and 63 educators; case studies of 6 VET organizations; and interviews and focus groups conducted in different states across Australia. Seventy-one percent of the responding students believed that they were receiving a high-quality online learning experience. The positive attributes of online learning cited by the students (in descending order of importance) were as follows: flexibility; responsive teachers; materials and course design; access to resources; online assessment and feedback; increase in information technology skills; learning style; interaction with other students; communication; ease of use; and hybrid mix of face-to-face and online learning. The following negative aspects of online learning were also cited: access and technology; lack of self-motivation, time, and self-discipline and problems with the learning approach; assessment; lack of teacher responses; confusion; resources; lack of support; and need for a help desk. (Fifty-two tables/figures are included. The bibliography lists 121 references. The following items are appended: an analysis of the questionnaire; questionnaire results; case studies; and a discussion of issues relating to the research project.) (MN)

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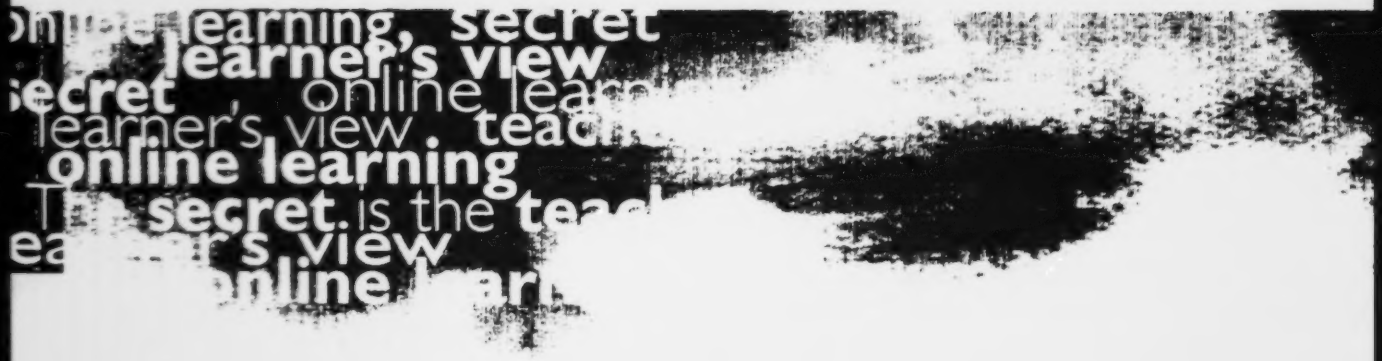

'The secret is the teacher'

The learner's view of online learning

online LEARNING

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'The secret is the teacher'

The learner's view of online learning

Joan Cashion

Phoebe Palmieri

AUSTRALIAN *FLEXIBLE LEARNING* FRAMEWORK

Strategy **2002** Projects

Managed by the Flexible Learning Advisory Group on behalf of all states and territories in conjunction with ANTA

flexiblelearning.net.au

Background

In August 1999, the Australian National Training Authority Chief Executive Officers (ANTA CEOs) endorsed the *Australian Flexible Learning Framework for the National Vocational Education and Training System 2000–2004 (AFL Framework)*. The AFL Framework has been developed by the Flexible Learning Advisory Group (FLAG) and represents a strategic plan for the five-year national project allocation for flexible learning.

The AFL Framework is supported by an annual implementation plan, and the plan for 2002, *Strategy 2002*, was endorsed by the ANTA CEOs in September 2001. It identifies specific initiatives and allocates resources within each of the five goals in the framework.

Role of the Flexible Learning Advisory Group

In broad terms, FLAG is a strategically focussed group of senior VET personnel advising ANTA CEOs, the ANTA Board, the Department of Education, Science and Training (DEST), and the Australian Information and Communication Technology Education Committee (AICTEC—formerly known as the EdNA Reference Committee), on national issues relating to the directions and priorities for flexible learning in VET, with particular reference to online technologies.[1]

An initiative of the Australian Flexible Learning Framework for the National Vocational Education and Training System 2000–2004

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The students and educators who responded to the online questionnaires not only gave us their views frankly, but also helped us to determine the scope of a technique new to us.

The interviewees, participants in focus groups and those who were interviewed for the case studies were generous with their time and with sharing their experiences and what they learned from them. We are particularly grateful to our colleagues who organised the case-study visits, interviews and focus groups in their organisations.

Staff of the Customised Training Development Unit at Swinburne University undertook the technical development and maintenance of the online questionnaires and the linking mechanisms. Their help was very much appreciated.

The National Centre for Vocational Education Research (NCVER) provided support and advice throughout the project and showed exemplary patience as we struggled to solve the inevitable problems.

To all these people, we offer our sincere thanks.

Executive summary

The aim of this research was to investigate the meaning of 'quality learning' from the perspective of vocational education and training (VET) online learners. The study used a mixture of qualitative and quantitative methods to elicit the views of students and VET organisations on what constitutes a quality online learning experience. This report describes the factors which emerged as important, and provides some suggestions for organisations wishing to provide quality online learning for their students.

Six different methods have been used to understand what constitutes good quality in online learning. Three methods involved the online questionnaire which provided open-ended questions, a Likert-type scale of responses ranging from 'strongly agree' to 'strongly disagree' and a Gap analysis which determined the importance of various aspects of online learning to students, including a rating of their experience. The other three methods involved the collection of data through focus groups, interviews and case studies.

Quality of online learning

Seventy-one per cent of all students responded that they believed they were receiving a high-quality online learning experience.

The positive attributes of online learning can be summarised as follows and are given in descending order of importance in terms of responses by students:

- flexibility (24%)
- responsive teachers (15%)
- materials and course design (14%)
- access to resources (9%)
- online assessment and feedback (7%)
- increase in information technology (IT) skills (6%)
- learning style (6%)
- interaction with other students (5%)
- communication (5%)
- ease of use (3%)
- hybrid mix of face-to-face and online learning (3%).

The positive aspects of online learning far outweighed those the respondents considered to be its negative attributes which were, again in descending order of significance in terms of responses:

- access and technology (25%)

- ✧ self—related to their motivation levels, lack of time, self-discipline and problems with the learning approach (9%)
- ✧ assessment (9%)
- ✧ lack of teacher responses (8%)
- ✧ confusion (5%)
- ✧ resources (5%)
- ✧ lack of support (4%)
- ✧ need for a help desk (4%).

Learning online

The students were very positive about the flexibility, freedom and convenience of the online environment, but quite clear that they did not prefer it to face-to-face classes. There was no consistent opinion from students concerning which form of education took the most time; for educators however, online education is considerably more time-consuming than face-to-face teaching. Students indicated that they were not studying online merely because they could not get to class; the online model in many instances presented a much more convenient option for them. While students did not miss the discipline of getting to class, they recognised that they needed to be more organised to study online than in class. Hybrid or blended delivery was seen very positively, offering flexibility together with the benefits of both face-to-face teacher-supported instruction and online learning.

Students appreciated the other skills gained while studying online: their IT skills and ability to use the internet were enhanced. They noted that they needed strong personal skills, especially motivation and time-management skills.

Flexibility

Flexibility was the most important and significant factor in high-quality, online learning, being the most common indicator of quality as defined by the students. Students strongly indicated that they relished the freedom of learning online and that online learning was more convenient than having to attend classes.

Good teachers, good teaching

The importance of good teachers, facilitators and tutors cannot be underestimated. The essence of good-quality online learning lies with the teacher. Online education is not concerned with replacing teachers with online content. Quality online learning relies on the work of good teachers. Responsive, helpful, knowledgeable teachers facilitate an effective online learning experience. However, without clear standards and expectations regarding the level and nature of teacher interaction online, the workload for teachers is untenable. A crucial aspect of this issue is the expectation of prompt responses from the teacher. Just what is 'prompt', and when and how often can a teacher be expected to be at the end of the line? Student expectations online are very different from those in face-to-face situations: they want responses the moment they request it, having no concept of waiting their turn as they would in class.

Communication

From the students' perspective online communication is not a strong feature of online learning at present. They saw email contact with their teacher as fast and efficient, but they did not interact more with other students online than they did in class. There was no indication that learning communities were developing online. The principal relationship for students was with their teacher, whom they wanted to be accessible and available to help them as needed. These responses would indicate that the community-building aspect of online communication is in its infancy in the VET sector and certainly has not reached its potential.

Online resources

Online interactive materials were very important to students and they accessed more learning resources online than when studying in class. Print-based materials presented online were assessed as not appropriate, but the provision of well-designed course materials which were interesting and stimulating received very positive responses. Students generally found their materials easy to follow, easy to understand and more up to date than class materials. In some cases, however, lack of adequate instructions was an issue. The wealth of resources accessible online was a very positive factor as were the links to other sites. One of the students noted that one of the very positive aspects of studying online was the high quality of course material online with hyperlinks to other sites.

Assessment

Online assessment was important to students. They appreciated computer-generated feedback, but wanted a more rapid turnaround from teachers. The greatest problems with assessment related to understanding what was expected of them. Furthermore, many students noted the technical difficulties encountered when downloading assignments and submitting work. Validity of assessment and cheating online were not raised as issues for either students or educators.

Support

Students did not indicate that they needed a lot of support to study online. They believed that induction was important, but reported that no one had checked their skills before they started. Since they did not have ready access to online help they wanted a real person to help them, rather than a computer screen. This was one of the greatest areas of difference between students and teachers. Teachers thought students would need more support than the students acknowledged they needed. An online help desk was one area of common agreement—preferably offering support 24 hours per day, 7 days per week.

Induction and instructions

The technology, the course materials and the requirements for assessment often confused students in the study. Induction and clear instructions are essential. Organisations must build into their online provision, a gentle but comprehensive introduction to the technology, to the online course structure and to studying online. They must also be clear about what they expect of students and what students can expect of the organisation.

Technology

Somewhat surprisingly, students' attitudes to the technology were predominantly positive. While respondents experienced problems with technology, only 25% reported these difficulties. While these complaints were loud and clear, it is worth remembering that the other 75% of the sample were accepting if not enthusiastic about the technology.

Respondents overall were positive rather than negative about their access to the internet and the associated technology. Access, speed and reliability are essential and are crucial to the success of online education. Students did not find getting into the system so difficult as to deter them from online learning nor were they annoyed with the length of time taken for web pages to download. The technology was not confusing. Online links did not always fail. They had easy access to the hardware and software and satisfactory access to the internet. However, clear instructions on how to use the technology and, in particular, how to download and submit assignments and other activities are critical to successful online study. When the technology does not work well, the quality of the learning experience suffers. When it is working, it is invisible.

Structure of report

The first chapter provides an introduction to the report, a brief outline of the methodology and an overview of the key findings from the research. A literature review surveys the current literature relevant to this research project and explores its contribution to the project. The literature review examines both the VET and higher education sectors. The following chapter describes in detail the methodologies adopted for this project while the subsequent chapter examines the demographic span of data utilised in the research project. The results of the national survey and outcomes from the focus groups and case studies are presented in the following chapters of this report while the concluding chapter summarises the principal messages emerging from the research. The appendices provide details of the questionnaire analysis, the results of the national survey and information relating to the case studies.

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Introduction and key findings from the research

Background to the study

Various forms of flexible learning are proliferating in Australia and around the world. Quality is espoused as an aim, with benchmarking studies and frameworks being devised in the attempt to achieve it.

The nature of 'quality' and the ways in which learning takes place are viewed differently by different sectors of education and by different organisations within any sector. Many aspects of these subjects have been researched, but the scope of such studies has rarely included the online environment, and has virtually never considered quality in online learning in the vocational education and training (VET) sector, nor considered the perspective of online learners.

Purpose and methodology of the study

This research project explored what comprises high quality in online learning for VET students in Australia. The study used a mixture of qualitative and quantitative methods to elicit the views of students and VET organisations to determine what constitutes a high-quality online learning experience. This report describes the factors that emerged as important, and provides some suggestions for organisations wishing to provide quality online learning for their students.

The report will be of use to those organisations wishing to aim for best-practice delivery, and will provide a foundation for benchmarking online learning.

Methodological techniques utilised comprised an online questionnaire with open-ended questions, a Likert-type scale of responses from 'strongly agree' to 'strongly disagree' and a Gap analysis which determined the importance of various aspects of online learning to students and how their experience rated. Data were also collected through case studies, focus groups and interviews. All of these techniques produced a consistent view of online learning.

Definition of online learning

At the outset of this project, the researchers debated whether to include only learning which took place purely online, or whether to include hybrid delivery; that is, a mixture of online and other delivery modes. It was concluded that the combination of modes might in itself be a factor relevant to views on quality, whether positive or negative. Online learning, for the purposes of this study was therefore defined as learning that occurs when the delivery of education or training is carried out via an intranet or the internet. It includes whole courses, single subjects and parts of subjects. It includes mixed or hybrid modes, as long as the online component is integral to the learning.

Limitations of the study

The researchers were keen to utilise online techniques in carrying out this study of online learning. The online questionnaires proved appealing to many respondents, and a good instrument in terms of data analysis. It is important, however, to be aware of the limitations as well as the strengths of this technique.

It became apparent during the project that, in order to get a full picture of student views on quality in online learning, it would be necessary to survey learners who had discontinued their study. However, this aspect had not been included in the scope of the research proposed. Difficulties in obtaining participation (discussed in more detail later in this report) meant that it was not possible to alter the research design to reach such learners. The respondents to the online survey must therefore be recognised as those students who have been successful at least to the extent of enrolling and making a start on their study program, and who have sufficient access to online technology to be able to do so. The study is unable to report on potential learners who have been unable to enrol, or learners who have dropped out of their program. The researchers consider that these groups could usefully form the subject of a further study.

Research questions

A set of questions informed the research project and were designed to elicit the learner's perspective on online learning. Each of these questions is examined in the following sections.

What is a quality online learning experience?

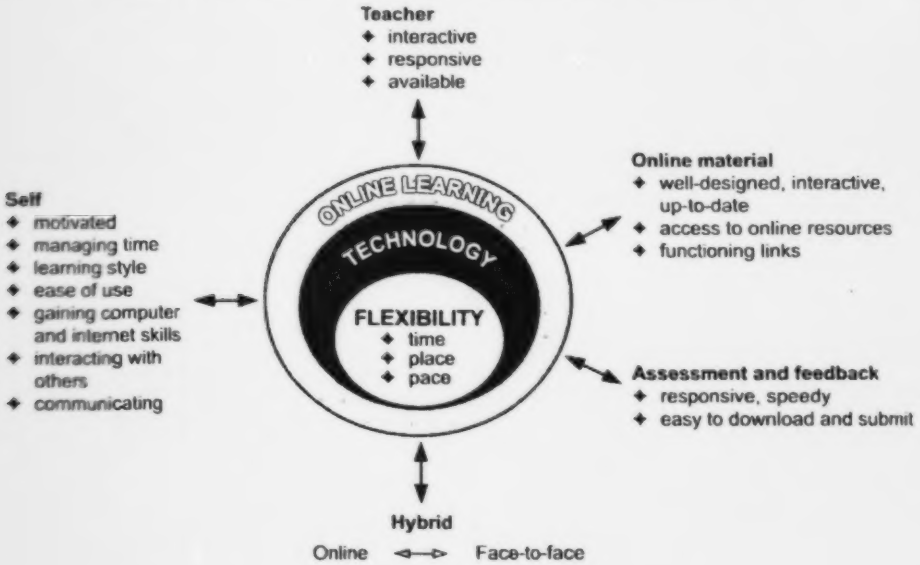
A quality online learning experience is one that provides flexibility and reliable technology. The heart of high-quality, online learning is flexibility. Flexibility not only includes the choice of time and place, but it should include options for face-to-face interaction. There is also the added flexibility of pace—choosing to go fast or slow, tackling a lot or just a small segment at any one time. Some students were very aware of what they needed to learn, and for some, the online mode provided an environment in which they could undertake the learning they wished.

Reliable technology that works at an acceptable speed is essential to ensure satisfactory and effective online learning experiences.

Teachers contribute enormously to the quality of online education and are crucial in the whole process. Quality online learning includes supportive, responsive teachers who provide clear instruction and answer queries promptly and constructively. Teacher interaction with students is a key ingredient. When students received individual, speedy feedback they were delighted with the experience. When the teacher did not provide feedback or took too long to respond, then they felt that quality was lacking.

Quality is achieved when there is a match between the learning experience and the learner's expectations. While the online medium provides the potential for high-quality learning experiences, standards are necessary to ensure this, including those relating to assessment and timely feedback.

Figure 1: Factors comprising high-quality online learning reported by students



What are the factors contributing to a 'high-quality online learning experience' as defined by online students?

The critical factors for the provision of quality online learning in priority order are:

- flexibility
- responsive teachers
- quality of materials and course design
- access to resources
- online assessment and feedback
- increase in information technology (IT) skills
- learning style
- interaction with other students
- communication
- ease of use
- hybrid mix of face-to-face and online learning.

The deterrents to quality are:

- problems with technology and access to the internet
- self-motivation, time etc.
- unsatisfactory assessment
- lack of teacher responses
- confusion
- poor or inadequate resource materials
- lack of support
- lack of help desk services.

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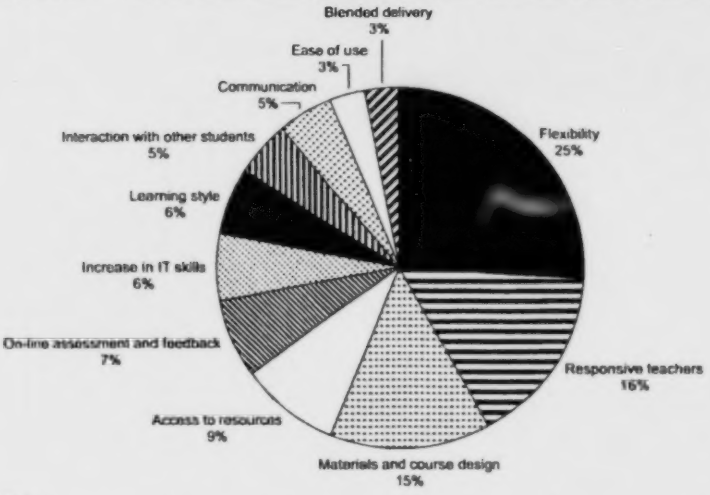
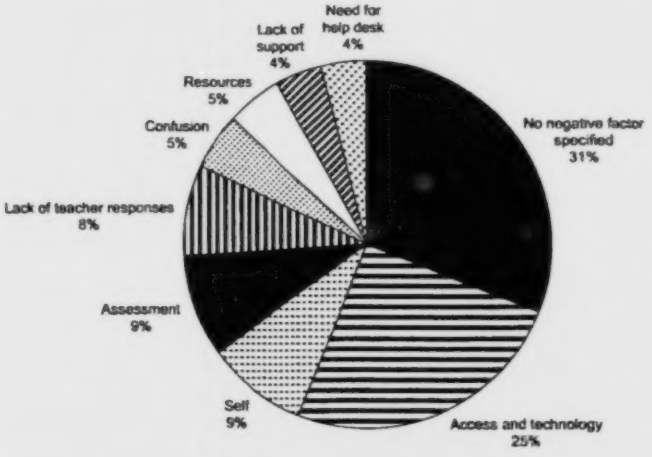
Figure 2: Factors contributing to high-quality online learning, by percentage of responses



Note:
Due to rounding, figures do not add up to 100%.

Figure 3: Factors militating against high-quality online learning, by percentage of responses



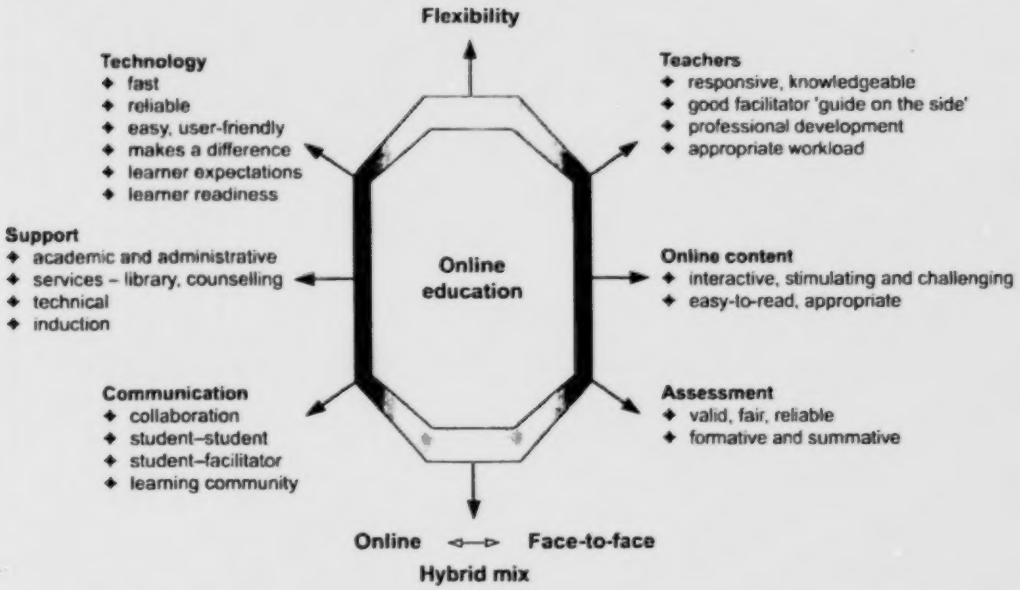
How do organisations define quality online learning?

There was no clear organisational definition of high-quality in online learning, although a variety of perspectives were provided by staff. Figure 4 gives a collated picture of high-quality, online learning as described by educators.

In the context of the organisation, the factors comprising high-quality online learning included:

- ✧ preparation for and induction into online study, especially in relation to the use of technology
- ✧ technical and learning support
- ✧ online learning materials (including assessment materials) that are clear, accurate, accessible and suitable for the needs of the learners
- ✧ a general preference for hybrid modes, with a note that the suitability of online delivery could vary with the subject matter as well as with the needs of learners

Figure 4: Factors promoting high-quality online learning as proposed by educators



- ✧ the importance of communication between students and teachers and between students and students, and especially suitability of the medium, skills of the teacher and the setting of behavioural norms for online interaction
- ✧ flexibility of time and place, balanced by the need of some learners for structure and external discipline
- ✧ the necessity for workable and accessible technology, and for the skills for utilising it.

The focus groups also highlighted the impact of online teaching on the work of teachers. The importance of online duties within the scope of budgets and workload planning was identified. Professional development is crucial to ensure that teachers have suitable skills to teach online.

What is the congruence between the indicators of quality online learning as perceived by organisations and by students?

A difficulty in this research was the lack of alignment between organisations willing to participate as case studies, the educators' responses and the student sample. This question has therefore been answered by comparing the views of educators overall with the whole group of students. While it does not present specific pictures for different organisations, the results indicate areas of agreement and those of difference between the educator perspective and the student perspective.

In the aspects of online learning compared, there appeared to be very little difference between students and educators. The importance for students of various aspects was marginally lower in most cases (the exception being in support) than to educators. Support and administration was the lowest area of importance for both groups. In all cases experience in the study unit rated less well than the aspect rated. This was true for both students and educators for all questions. While support and administration scored the lowest value, it was also the least important aspect for both groups. Technology was the most important with mixed ratings; flexibility rated best.

Educators' perceptions of quality online learning were in general more critical than those of students: fewer educators expected that the online learning experience would be one of quality

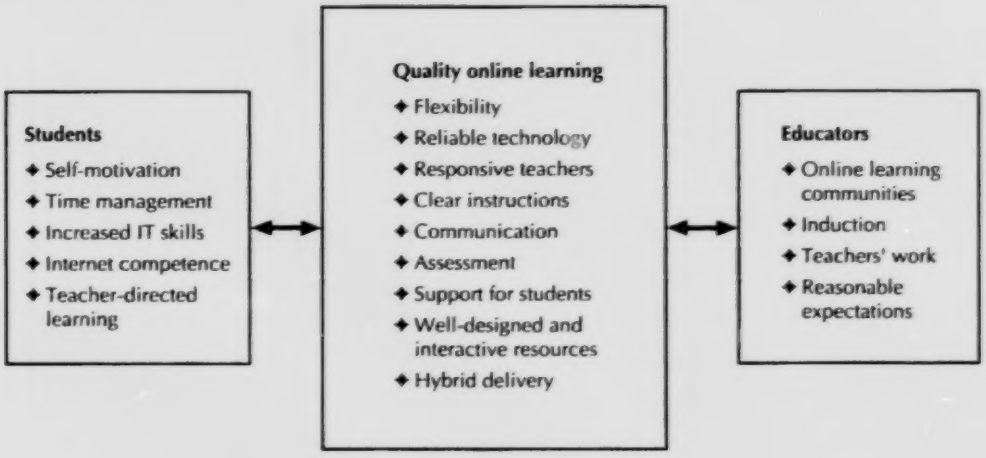
than did the students themselves. Through the Likert scale and Gap analysis, educators' and students' responses were, however, found to be congruent within the error ranges in most areas.

Online support is the area of most difference between students and educators. Students rated support and administration as slightly more important than did educators. However, educators expected students to require more support than the students thought they needed.

As might be expected, students commented on self-attributes while teachers were concerned about the change from teaching in a classroom to that of working online. Students identified their personal attributes that contributed to quality online learning, in particular, self-motivation, time management, organisation and commitment. They also recognised that their own laziness, lack of motivation, self-discipline and boredom detracted from quality online learning.

Teachers are very willing to work online but would like the additional work recognised. Students expect teachers to be on call whenever they need help and this is a major problem for both groups. The workload must be manageable. The immediacy of email is both positive in providing almost instant feedback and responses, but also problematic in the expectation that a teacher will always be available at the end of the line, willing and able to provide feedback any time of day or night. Realistic expectations and guidelines need to be set.

Figure 5: Students' and teachers' perspectives of online learning



Where does the 'learning experience' start and finish in online education?

This question was included because the researchers were aware that teaching organisations, as well as state and national VET agencies, place importance on the availability of online information about institutions and programs to students, prospective students and the public. They wished to know whether students' access to enrolment and pre-enrolment processes and information was counted as part of the learning experience.

The majority of students considered the online learning experience began at enrolment or at the first lesson. The majority of educators considered this experience to start at the first lesson.

How do students rate the importance of different aspects of online learning?

Flexibility, content, technology access and communication were all very important to students as part of their online delivery. Flexibility was the prime factor in providing high quality while technology was perceived as the main deterrent. Both the technology itself and the access to the online environment caused students problems, with the access causing the greater number of difficulties and complaints.

The following ranking of factors is derived from the specific questions which determined the importance and rated the experiences of various aspects of online learning. This was done through the Gap analysis:

1 Technology

2 Assessment

3 Communication

4 Flexibility

5 Support.

The online environment is characterised by many different aspects, some of which were very important to students while others were not so important. While online learning is not perceived as preferable to face-to-face learning, students do value the flexibility it provides. Achieving the balance of flexibility, face-to-face teaching and support with the use of the online technologies is critical in providing high-quality learning.

Administration barely rated a mention. One student specified that easy online enrolment had contributed to quality online learning and another two noted that problems with administration were factors that detracted from quality of the experience.

The importance of content encompassed both the information being imparted, and the design of the online learning resources. While both rated equally in the positive side of quality, poor design was a significant factor in the responses on the negative side.

How do students rate their present online learning experience with respect to these indicators?

The majority of students indicated that they were satisfied with their online learning experience, and the positive characteristics of their experiences were, overall, congruent with the qualities they valued. The ranking of their present online experience displayed a different order from that indicating aspects of most importance. Support was least important and rated worst. Technology, assessment and communication were in the same order, but while flexibility rated as fourth on the importance scale, it was rated best on the actual performance scale.

The current online experience rated:

1 Flexibility

2 Technology

3 Assessment

4 Communication

5 Support.

What is the baseline for online education with respect to the learning experience? What are the essential elements for any online delivery?

The essential elements for effective, high-quality, online programs from the learner's point of view can be summarised as:

- ✧ technology that is available, affordable, reliable and easy to use
- ✧ the flexibility to work at the times and places of the learner's choice, and at the learner's pace
- ✧ teaching and other staff who respond promptly, thoughtfully and in an informed manner to requests for help or other contacts
- ✧ clear instructions for the study program, assessment requirements and methods and protocols for communication and submission of work
- ✧ accurate, up-to-date, comprehensive and well-designed learning resources, which include clear navigation structures, clear directions to students, and mechanisms to enable students to judge their progress
- ✧ the inclusion of links to online resources, including interesting people, and the updating of these links to maintain currency
- ✧ assessment mechanisms that are valid, reliable and easy to use
- ✧ the opportunity to use and extend IT skills
- ✧ online resources which cater for varied learning preferences, including synchronous/asynchronous interaction, text, visual and aural media, and others
- ✧ online techniques which support and promote interaction between students as well as between student and teacher
- ✧ communicative devices which encourage co-operative and self-directed learning as well as teacher-directed learning
- ✧ online programs and organisational procedures which avoid problems such as confusion, excessive download time, unclear learning structures and excessive cost
- ✧ the availability of multiple modes of learning so that learners may opt for all online, all face-to-face or a mixture of modes.

Educators in the focus groups supported the factors above, including an additional factor, that of induction to ensure that learners understand the program, what they can expect of the learning organisation, and the skills and equipment they will need.

Is there evidence that students make use of the flexible attributes of online learning—anywhere, anytime, any amount, or that these attributes are important to students?

Flexibility rated as the number one component for 'quality online learning' with students valuing all the aspects of flexibility.

Figure 6: Aspects of flexibility

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There was no evidence that programs are customised for different students, so that at this stage, the 'just for me' element of flexibility was missing. However, the benefit students saw in being able to determine their own pace of learning clearly emerged: some students wanted to speed through the work, while others wanted to reflect and assimilate information at a much slower pace.

Literature review

Introduction

A growing body of literature discusses the planning and pedagogy of online education while some case-study material describes the introduction of such programs. Little has been written, however, on the degree to which online programs are providing high-quality outcomes for learners undertaking them, or on what learners perceive to be the factors which constitute quality in online education.

Within quality frameworks for educational organisations, 'quality learning' is a much used expression. However both 'quality' and 'learning' have a range of different interpretations placed on them by different sectors of education and by different organisations within any sector. Educational researchers have pondered this problem and investigated the extent of meaning for many aspects of education.

The scope of such studies has rarely included the online environment, and they have rarely considered online learning in the vocational education and training sector, nor considered the perspective of online learners. Little has been written on the degree to which online programs are providing high-quality outcomes for learners undertaking them, or on what learners perceive to be the factors which constitute quality for online education.

This literature review surveys the literature germane to this project, and explores its contribution to the current research. The review considers both VET and higher education developments, since insufficient sources have been located to justify confining it to VET. Moreover, although there are differences between higher education and VET courses and students, there are, of course, many similarities.

Online learning experience

It is first necessary to consider the nature of the online learning experience. What are the boundaries? Where does it begin and end? Most of the literature appears to assume that it consists of the following elements: the transmission of content material from the teacher (or the organisation) to the student; the development or acquisition of skills and knowledge by the student through independent research; formative or summative assessment of the learning acquired; and interaction between student and teacher, or between student and student, by various means including email, discussion boards and chatrooms. Few writers include the acquisition of pre-enrolment material (in order, for example, to assist in course selection), the enrolment process itself, or induction and orientation programs. This may be because all, or most of these activities are commonly done by non-electronic means. For example, Chizmar and Williams (1997) note that, among the barriers to online learning in their university, the procedures for admission and registration are extremely difficult for those who can't complete them in the traditional ways. The current project asks students to state their own views of where these boundaries are placed.

In designing the current project, another type of boundary was discussed; that is, should the study be confined to students undertaking 'pure' online study, or should hybrid-mode students be included? In some quarters the quality of online education is discussed without reference to its context, but Whitehouse (1997) suggests that:

> ... electronically mediated, self-directed learning will work for some institutions and some learners but not for all in all fields. It will become increasingly important to understand where network learning is the most appropriate alternative or supplement to traditional modes of delivery, and how it can best be implemented.
>
> (Whitehouse 1997)

This proposition was a factor in designing an element of the methodology in the current research: whether it should include only students whose study was conducted solely online, or whether it should include also those studying in a hybrid (that is, online and face-to-face) mode. As noted earlier, the decision was for the latter choice, on the grounds that the mixture of modes may in itself be a quality factor (whether positive or negative) for some learners.

A number of commentators criticise the use of the world wide web as an 'alternative publishing medium' (Nowak 1998); that is, simply a way of making course materials available at little expense to the organisation (because the cost of printing and distribution is transferred to the student). Nowak (1998) suggests that 'meaningful "online" learning' must use the technology to build learning teams and to encourage global learning communities. His view of quality online learning includes independent learning, just-in-time learning, and 'interdependent' learning where students can interact with persons from around the world as well as those involved in their course. He emphasises the importance of 'personal connections' made through the electronic media to provide a comfortable and safe environment for the learner.

Another type of required connection identified is that with an adequate source of technical help:

> ... technology provided without adequate technical support is at best a disappointment, and at worst a serious waste of resources ... The technical support officer needs to be a skilled communicator, able to give clear instructions over the phone, because every problem that he fails to solve by phone will necessitate a further visit to the site. (Anderson 1996, p.49)

Mixed mode may include other techniques as well as personal interaction with teachers and students: 'print-based learning guides, sent out well in advance, can provide the basis for a productive online lesson' (Anderson 1996). This approach would counter the trend towards 'user-pays' distribution of materials noted above.

Pedagogical aspects of online education are necessarily of high importance. A vital part of this discussion, in a context where the move to online delivery may be prompted by organisational issues as much as by the desire of teachers and learners, is the relationship of the pedagogy to the delivery mechanism. This is well summarised in a paper which discusses teaching practice together with administrative and political issues:

> The first question that must be answered by an instructor who is contemplating teaching an Internet-only course is essentially the same question that must be addressed by an on campus classroom instructor—what pedagogy should I use? However, an Internet instructor must evaluate potential answers to this question against his/her answer to a second question—will the pedagogy work over the Internet using a variety of Internet delivery techniques, including Web documents? Furthermore, it must be understood that this second question is subordinate to the first. The pedagogy must drive the choices of instructional technology, not the other way around. (Chizmar & Williams 1997)

The purpose of pedagogy is to provide a setting in which learning can take place. In considering whether and how this occurs, a number of writers suggest generic learning outcomes, independent of discipline-specific learning. For example, Barrs et al. (1990), quoted in Syverson

(n.d.) posits five areas of student development, evidence of which is sought in assessment and evaluation processes:

- confidence and independence
- skills and strategies
- use of prior and emerging experience
- knowledge and understanding
- reflection.

Syverson (n.d.) also suggests that learning emerges from interactions within the virtual environment and between the virtual environment and the 'external environment(s) in which learners and instructors participate'. In the current study, these have not figured largely (so far) in the responses of students or educators; it will be necessary to examine the survey instruments to see whether they preclude or inhibit such responses.

The current study does not seek to differentiate between the views of students with different learning styles. In the early 1990s the thrust for flexible learning emphasised the ability of methodologies encompassed under this heading to cater for different learning needs and styles as well as different life circumstances. It may be expected that this would influence students' perceptions of online learning. Indeed, Misko (1994) states that: 'Once students, teachers and administrators have accepted the notion of customising instruction to individual styles the question of accurately identifying styles becomes a critical issue'. But this must be the subject of a different study, one which could isolate values which are aggregated in the current research.

In the following pages, literature guidelines or suggestions for good practice in online learning (which might be termed prospective views) are discussed separately from those which evaluate the views of learners and others about their online experiences (retrospective views).

Policies, planning models, frameworks and overviews

The Australian National Training Authority (ANTA) Flexible Delivery Taskforce (1996) summarises the 'user requirements' of individuals as follows:

> Individual users of VET products and services require:
>
> - training that is widely recognised and portable
> - training delivered at times and in places to suit lifestyle and work demands
> - appropriate and adequate learner support and tutorial assistance
> - simple and streamlined administrative procedures
> - easy access to information on training courses
> - easy access to learning resources, and
> - flexible assessment procedures. (ANTA 1996, p.55)

'Users' in this report include both individual learners and enterprises. The question therefore arises whether exploration of the views of individual learners only, and asking the question in relation specifically to online learning rather than to flexible learning in general, some five years later, will elicit a similar list.

A number of frameworks exist for planning and evaluating online learning. *From chalkface to interface* suggests that 'the main guiding force of educational projects using technology should be the needs of learners and other clients and stakeholders' (Palmieri et al. 1996). The needs of learners are grouped in categories devised in an earlier framework (Palmieri, Blanksby & Hammond 1995) under the headings of 'access considerations, desired outcomes, convenience and learning effectiveness'. Convenience in this sense includes the dimensions of flexibility, including time, place, delivery method and others. Emphasis is placed not on one particular type

of delivery, but on selecting a method which is suitable for the needs of the target group of learners.

The principles enunciated in this framework relate to the following topics:

- ✧ learner focus and other stakeholder interests
- ✧ organisational requirements and constraints
- ✧ evaluative framework
- ✧ organisation and resources
- ✧ teaching and learning
- ✧ technology and learning materials.

The flexibility of this approach would indicate that the factors identified as contributing to quality in online learning might vary considerably between the individuals surveyed. For example, some might value independence, while others might see interaction as the most important factor.

Some congruence can be seen between these principles and those recently developed by the American Distance Education Consortium (2000), which proposes the following as requirements for good practice:

- ✧ design for active and effective learning
- ✧ support the needs of learners
- ✧ develop and maintain the technological and human infrastructure
- ✧ sustain administrative and organisational commitment.

Another recent framework which has attracted some attention (Institute for Higher Education Policy 2000) provides 24 benchmarks for success in online distance education developed from case studies of six colleges and universities providing online degree programs. Those considered essential for quality internet-based distance education are categorised under the following headings:

- ✧ institutional support
- ✧ course development
- ✧ teaching/learning
- ✧ course structure
- ✧ student support
- ✧ faculty support
- ✧ evaluation and assessment.

Mitchell and Bluer (1997) in *A planning model for innovation: New learning technologies* suggest that:

> The use of new learning technologies, such as computer networks, personal computer conferencing and videoconferencing, should result in improved learning outcomes, broadly defined.
>
> To achieve this improvement a range of factors need to be in place:
>
> - ✧ clear learning objectives
> - ✧ common understanding of the objectives
> - ✧ a clearly established and accepted need
> - ✧ a clearly identified role for the technologies
> - ✧ technologies are seen as a tool with a clearly defined role in the learning support process

- ✧ the technology assists interaction
- ✧ monitoring and evaluation of the process, including the use of performance indicators
- ✧ just-enough and just-in-time professional development available to staff
- ✧ an established and maintained technology infrastructure
- ✧ support for students in orientation and skills development is available.

(Mitchell & Bluer 1997)

While the success factors cited above appear to cover a broad range of topics, a closer reading reveals a good deal of common ground. In particular, there appears to be general agreement on the need for good quality of content material, support for interactivity between students and teachers, general support for students in various ways, flexibility of delivery, and a recognition of the diversity of students' requirements and preferences.

The students need to be 'trained' in the basic use and operation of the technology before they start and this is often best achieved by 'face-to-face' instruction at the beginning of the session.

Related to this aspect is the equity issue of student access. Some universities have dial-in access for students, but most students will need access to a private internet service provider. As a good rule of thumb, it was suggested by many that problems associated with technology are minimised by designing the web interface to the 'lowest common denominator' in terms of available technology. Some students may also require supported access to a computer, whether by loan or by access to computer labs on campus or elsewhere. But successful access to technology must include prompt and informed support. Corderoy and Lefoe (1997) assert that 'the most common suggestion for overcoming or alleviating technology based problems included ensuring that all students have access to first class technology support provided by people who know more than just what buttons to press. It was suggested that support personnel needed to have an understanding of how the technology works and how it can be best utilised in online learning environments.'

The literature described above is mainly intended for use in planning and organising online programs. Other writers discuss good practice more in terms of the teaching and learning process itself.

There appears to be a consensus that the educational experience should be student-centred rather than teacher-centred. Pittman, for example, suggests that 'for the university experience to be student-oriented at least four key elements need to be present—convenience and service, relevance and value' (Pittman 2000).

An aspect that recurs frequently is interactivity. Many writers assert that interaction both between students (individually and as a group) and teacher, and between student and student, is an enjoyable component of online learning and one which helps to keep students motivated to continue in their studies. For some, it takes the place of, or indeed acts as, the 'social' component of the learning experience whose importance is increasingly realised.

'Online education can assist in creating communities of inquiry capable of stimulating intellectual, moral and educational growth' says Warschauer (1998); but in order to do this, according to Cashion and Palmieri (2000a), 'it is important to build an environment where all participants feel safe to express their views and opinions and where the interaction enhances the learning' (p.3). How, then, are these social dimensions to be examined? A study of the social impact of online learning (Victoria DEET 1999) identified positive and negative aspects of online learning under the headings of Relationships, Teaching and learning, Flexibility, Fairness, Student support, Assessment and Other.

A vital aspect of the interaction aspect is that teachers respond promptly to students' communications. Interaction needs to include structured as well as spontaneous components as Corderoy and Lefoe (1997) note:

> The subject should also provide activities that will help the 'doubters' accept and use the medium, promote interdependence amongst students and convince them that a community of learners is important because they can learn from other students, not just the instructor. (Corderoy & Lefoe 1997)

Interaction comes high in the priorities of Chickering and Gamson, whose seven principles for good practice in undergraduate education include the following:

- Good practice encourages student-faculty contact.
- Good practice encourages cooperation among students.
- Good practice encourages active learning.
- Good practice gives prompt feedback.
- Good practice emphasizes time on task.
- Good practice communicates high expectations.
- Good practice respects diverse talents and ways of learning.

(Chickering & Gamson 1991, p.63)

Working from a course design point of view, Brown (1997) proposes three essential quality factors: hypertext; active and collaborative learning; and learner-centredness. The hypertext element gives learners the opportunity to explore for themselves among a rich array of resources. Active and collaborative learning enables students to relate their learning to their own experiences and make use of these and allows students to contribute to each other's learning. The interface design of the program is one of the critical elements for learner-centredness as it caters for the varied requirements and preferences of individuals. This combination of elements, according to Brown, fosters independent learning and allows for self-pacing.

A review of research conducted by Phillips (1998) proposes that 'the most effective way that the internet can be used in education is in a student-centred mode, which encourages communication and collaboration. The most important factor is in the design of the activities in which students engage.'

Further Phillips, referring to a DEET-funded study suggests that:

> ... employers say that communication and teamwork are important, and research and best practice indicate that these characteristics can be fostered by Internet technology. However, on the other hand, the majority of online courses are based on an objectivist approach, with an emphasis on the delivery of content to passive 'learners'. In order to resolve this dichotomy, all levels of tertiary education (administrative, academic and technical) will need to reflect on and reconsider their entrenched beliefs about teaching practice. It is only by challenging paradigms that the gap between current practice and research can be bridged.
>
> (Phillips 1998)

Both Laurillard (1993) and Alexander (1995) have developed strategies which apply online learning ideas to the seven principles of Chickering and Gamson. Laurillard (1993) discusses a number of key aspects of learning that can be used in any discussion about teaching strategies. These are:

- Apprehending structure ...
- Integrating parts ...
- Acting on the world ...
- Using feedback ...
- Reflecting on goals—action feedback ...

(Laurillard 1993, p.86)

While Alexander (1995) reports that:

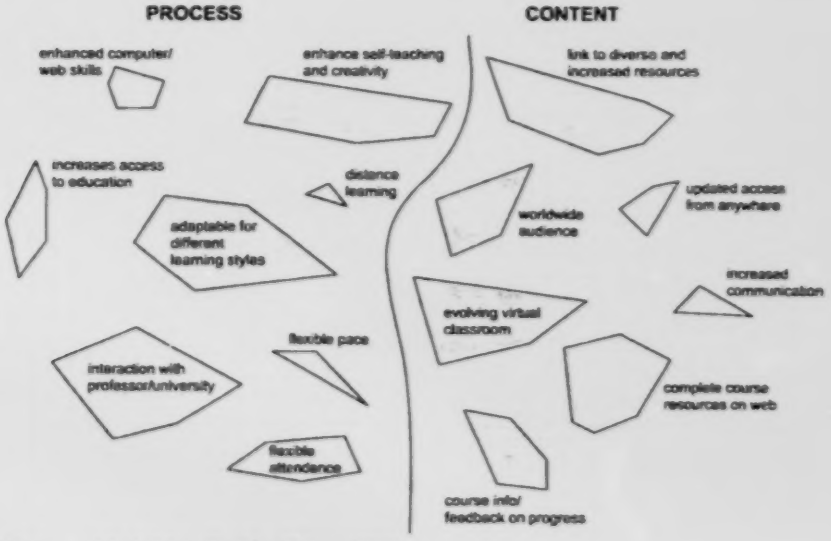
> The challenge for educational developers is to use this knowledge of learning together with an understanding of the features of the WWW, to design learning experiences which promote a deep approach to learning so that 'what' students learn is a deep understanding of the subject content, the ability to analyse and synthesise data and information, and the development of creative thinking and good communication skills. (Alexander 1995)

Evaluation of online learning experiences

Another type of literature reports on the evaluation by students of the courses in which they are enrolled, usually within an evaluative structure devised by their teachers. The majority of these are North American studies, although some Australian data are available. Although it is especially interesting for the purposes of the current research to examine students' views in contrast to those of educators, many of the studies referred to should be treated with some caution for two reasons. The first is that, necessarily, the numbers of students surveyed tend to be small; the second is that the survey instruments are, in most cases, designed to elicit views about what *is*, that is, within the scope of the particular programs in which the group was enrolled, rather than about what *might be*, if the students had a say in designing programs.

An exception to the latter statement is an interesting study (Trochim & Hover 1996), which uses a concept-mapping technique to elicit from students their views about the potential benefits of using web-based technology to support course activity and learning. Students were asked to give their general views about the ways a website could enhance or facilitate learning in an undergraduate course, and then to use their analysis of these data to develop 'maps' of their beliefs and expectations, and their relative importance. The results are depicted in the diagram below.

Figure 7: Concept map



Source: Adapted from Trochim & Hover (1996)

A study conducted at the University of Sydney (Gazzard & Dalziell 1997) evaluated a web-based tutorial in philosophy. Students in the program indicated that they valued the social interaction with tutors and other students, the interactivity, the quality of the content, and the ability to apply

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concepts learned in the tutorial to video clip scenarios. The web-based tutorial was undertaken in a group, in normal class time, and this factor should be remembered when considering the social aspects of the learning experience.

A study of the use of asynchronous learning networks at Penn State University evaluated student satisfaction with online learning. It provides a superficially different, but not incompatible, set of factors, assigning the responses to the following categories:

1. Enhancers
   - ✧ removal of geographic barriers to participation in higher education
   - ✧ mitigation of situational barriers
   - ✧ high quality course content
   - ✧ opportunities for career development/possibility for promotion
   - ✧ name value of Penn State
   - ✧ level of interaction with faculty and World Campus Learner Support unit
   - ✧ use of technology in the course (as an enabler, not an end in itself)
2. Detractors
   - ✧ technical difficulties (browser, ISP problems)
   - ✧ course workload (time requirements beyond expectations).

(Thompson & McGrath 1999)

These results tended to confirm the university's initial assumptions regarding the importance of convenience, quality, and opportunities for interaction to students, and it is worthy of note that students' responses in the pilot survey of the current study support these findings. The students' views about the importance of career considerations and the reputation of the university in the workplace as factors influencing their choice to participate in world campus programs and in their satisfaction with their courses are interesting factors not encountered in other research. Also of interest, and unusual in the way it is reported, is the fact that students did not generally cite the technological features of their courses as primary enhancers of their satisfaction; rather, they viewed these features as problematic when they did not work well, but ultimately desirable secondary mechanisms for ensuring convenience and interaction. Kemshal-Bell (2001) notes the tendency of early online programs to 'focus on the technology rather than the pedagogy'. The Penn State experience supports the developing view of the researchers in the current project that technology, rather than forming a quality factor in itself, is more in the nature of a pre-condition; that is, without adequate access to technology and technological support, quality factors in online learning simply cannot operate.

Another study, discussing the experience of teaching graduate courses to teachers at a community college in Florida, finds similar positive factors to the 'top two' in the previous reference. Kubala (1998) notes that: 'When students were asked what they liked most about the courses, words like flexibility and convenience were at the head of the list'. He also found that, because of the degree of 'anonymity' in learning online, they participated more freely in discussion than they did in face-to-face classes.

Examination of the learning strategies of undergraduate students in two law-related units elicited a strong value placed on interaction in learning, which these students perceived to be absent in their online programs (Zariski & Styles 2000).

In the context of aspects of technology on which students were asked to comment, views tend to differ according to which type of technology is under discussion. A study of students undertaking a Business English course examined their views on the use of websites (for simulation and research projects and for learning contract projects), email (as used for collaborative writing), and discussion boards (for peer editing). Of these, the discussion board was by far the least popular; it was considered time-consuming, and students appeared to be unsure about how to comment on

other students' work. Websites were popular for finding information and for downloading materials, although it was pointed out that this could be slow and expensive to print. Email was popular because it was very user-friendly and convenient, although it developed an expectation of fast response from tutors (Ng 2000). The findings of this study in relation to the use of discussion boards is supported by anecdotal evidence from the researchers' own work: that discussion boards are popular with those who are confident in using them, but can be daunting for newcomers.

A study of students' views about a course delivered by audiographic conferencing took a positive view of this type of technology. The conclusions were that:

> Students perceived the technology to have a liberating effect on their learning and interaction ... Despite technical problems, students surveyed seemed to be very positive about the technology and were comfortable using it ... Several students mentioned that the style of learning in the electronic classroom helped them engage in independent inquiry and become more self-reliant. (McLoughlin 1998)

While many of the studies examined present a predominantly positive view of online learning, Hara and Kling (1999) found some negative responses. Their search revealed that higher education students experienced a severe frustration with certain aspects of their study, often so great that the students dropped out. Frustrations reported included technology problems, pedagogical issues (especially ambiguous instructions), insufficient or delayed feedback, difficulties associated with online chat, technical assistance unavailable at times when it was needed, and loneliness associated with the lack of face-to-face contact.

The authors expressed very serious concern that the negative aspects of online learning have received insufficient attention in the literature. It will be important in the current research to ensure that any negative aspects of online education identified are reported as well as the positives when determining critical factors for quality online education.

Another study that reported negative opinions describes an experiment where students who were expecting an onsite course were required to work online at fixed times in a computer lab. Contact with the instructor was electronic only, although a teaching assistant was available in the lab. Considerable degrees of frustration on the part of the students were reported, including poor performance in assessments. Frustrations were grouped around the themes of regretting the unavailability of face-to-face contact; wasting time because written materials or instant (face-to-face) feedback and discussion were not available; being unclear what to do (with the lesson or with technology); and communication problems (Westrom & Pankratz 1998). The question must be asked, however, whether the artificial, quasi-experimental nature of the program contributed to these frustrations.

Technical problems were again the major difficulty encountered by students in trialling the Canadian Virtual U, as reported by Harasim et al. (1995), and likewise in a longitudinal study investigating internet use in a school in Canada (Gibson & Olbert 1998).

In an ANTA-funded project documenting teaching and learning styles which facilitate online learning, participants were asked to identify problems associated with online teaching and learning. Most of the reported problems relating to the current research were technical, concerning adequate access to and reliability of technologies. An interesting comment related to '[d]ifficulties in making the online learning environments work within a wider system. When management of the technology dictates the format and design of the learning programs it can be difficult to develop effective learning environments' (Jasinski 1998).

This last point raises again the issue of the political and organisational agendas driving the adoption of online learning, which were mentioned earlier in this review. Examples of this are cited by Noble (1998), in a polemical article. According to Noble, administrators at both UCLA and the University of British Columbia pressed ahead with plans to introduce online learning

systems, in spite of recommendations against this course from students. Noble suggests that such organisations are:

> creating a market by fiat, compelling students (and faculty) to become users and hence consumers of the hardware, software, and content products as a condition of getting an education, whatever their interest or ability to pay. (Noble 1998)

While not all educational institutions intend to force their students into online learning, it is important to keep a wary eye open for such tendencies, particularly in view of the issues of access (and affordable access) to technology already noted.

Some research indicates that many students prefer face-to-face learning if it is available, and would rather have teacher-led learning. Although some educators assume that adult students are ready for independent learning, recent research indicates that many students, especially young adults, are not ready.

> At the Self-directed end of the dimension are learners who prefer to set their own learning goals and to learn independently; at the other end are learners who prefer a context that provides detail of what is to be learned and how, and where instructors provide leadership of their learning. Our sample of VET learners was heavily skewed towards the Dependent end of that dimension. (Smith 2000)

Warner, Christie and Choy (1998) report a similar state of affairs, while Crouch and Montecino (1997), suggest that:

> ... the learner who does best in an on-line environment is generally used to working independently, has personal motivation to learn and knows what he/she wants to achieve. In short, it's an adult student who pursues learning regardless of circumstances. (Crouch & Montecino 1997)

In view of these findings, an argument could be made that the skills required for independent learning should form a component of online courses, although there is little or no evidence that this happens at present.

An alternative point of view would suggest that hybrid modes of delivery are generally the best. The last of six recommendations for online learning made by Zariski and Styles (2000) is to 'mix modes—the online mode should be used for what it is best at, which for these students [undergraduates in legal studies] is for linking material, for researching the literature and for (in some cases) discussion'. At a more general level:

> ... the caution for educators is that they should check their target audience first before jumping in to all-on-line delivery. After all, it is well known that distance education does not suit all learners and on-line delivery is heavily dependent on distance education techniques. (Webb 1998)

In a similar vein, Carswell et al. (2000) assert that:

> The distance approach to education requires an understanding of the issues facing part-time students, including
>
> - dealing with distance: ie, overcoming isolation
> - dealing with asynchronous learning: ie, handling delays when help or feedback is not available as soon as required
> - managing part-time study: ie, coping with job, family or other commitments as well as studying. (Carswell et al. 2000, p.30)

These are all issues that are raised in various forms earlier in this review.

Many researchers have attempted to evaluate the quality of online education by comparing the results of online learners with those of 'traditional' students studying the same course. The aims of these studies have varied from trying to prove that the online students experience the same quality of education as those who have had face-to-face instruction, to proving that the instructor really improves the quality of education for on-campus students. A book has been published

(Russell 1999) and two websites (Russell 2001a, 2001b) are devoted to evidence of results from these studies. The studies make interesting reading, but their impact on research into the quality of online education is limited. Many of the research techniques are such that any results obtained for the online education in comparison to face-to-face instruction will show that there is no significant difference. This is more a statement about the methods used than what is actually happening.

North Carolina State University has published at least three separate studies by different academics from 1997–99 that concluded that the delivery strategy made no difference in the results obtained by either online students or face-to-face students. The same university has also published two studies that 'proved' that there was a significant difference. However, in more detailed analysis of the work, one study by Dutton, Dutton and Perry (1999) is quoted both as providing results to support no significant difference and supporting the hypothesis that there is a significant difference.

Earlier studies, such as Johnstone and Kraut (1999) on the achievement and satisfaction of students in distance education, have found that there is no significant difference from this group and those in traditional classrooms. This does not mean that any particular student will perform equally well in either medium, but rather that overall, there is no statistical difference in the mathematical analysis of the scores. Various researchers have been able to pull out figures that 'prove' that a particular demographic group performs better online, but none of this work is conclusive. It seems that the outcomes are determined by the research design, rather than the data.

On the other hand, as Chin (1999) notes:

> As students now have more exposure to the use of Internet/WWW in education, where many have seen good and bad examples during their course of study, their opinion on the topic becomes more useful in providing guidance to educators who intend to embark on the route of on-line education. (Chin 1999)

In Chin's study of students over five web-based study units, a majority of the students report positive attitudes to online teaching and learning. Moreover, most of them considered that web-based teaching should be used to supplement classroom teaching rather to replace it. More searching questioning on the learning outcomes did not indicate outcomes better than those gained by class teaching.

Many studies attempt to assess whether online learning is an effective method in terms of learning outcomes. Chang and Fisher (1999) reported on the development of an instrument to evaluate the effectiveness of web-based learning environments. In this they draw on the understanding of Laurillard (1993) and Tobin (1998) in their analysis of the processes involved in learning. Their instrument was intended to capture students' perceptions of a web-based learning environment by evaluating 'emancipatory activities; co-participatory activities; qualia [that is, qualitative judgements]; information structure and design activities'.

The pilot study looked at students enrolled in an electronic commerce unit that can be studied fully online or face to face. Data analysis was mainly utilised for assessing the quality of the questionnaire, but indicated the popularity of email for interaction, and high use of online study materials and remote library facilities.

While it was considered necessary to review these comparative studies, few, if any, conclusions can be drawn from them at this stage. It is, indeed, debatable whether it is useful to ask in such general terms whether online learning is 'better' or 'worse' than more traditional forms. However, analysing the suitability of online and other forms of delivery for various groups of learners, in demographic, discipline-based and other categories is likely to prove a valuable undertaking.

Quality factors

Sufficient common ground has been found in the literature reviewed above to enable the current researchers to compile the following list of factors identified by Cashion and Palmieri (2000b) for consideration in the project's main survey and case studies.

1 Induction
2 Support
   - ✧ academic
   - ✧ administrative
   - ✧ technical
   - ✧ services
   - ✧ learner readiness
   - ✧ learner expectations
3 On-line content
   - ✧ interactive
   - ✧ easy to read
   - ✧ easy to navigate
   - ✧ on-line vs hybrid
   - ✧ on-line
   - ✧ face to face
4 Communication
   - ✧ student-student
   - ✧ student-facilitator
   - ✧ collaboration
5 Feedback
   - ✧ prompt
   - ✧ often
   - ✧ incentives—on-line 'chocolate frogs'
6 Fitness for purpose
7 Technology

(Cashion & Palmieri 2000b)

Research issues

Ethical questions and ways to approach them are well understood in the context of research by conventional methods. But new problems emerge when the research itself makes use of online methodologies. Chief among these are the issues relating to identity and pseudonymity. They are well summarised by Roberts (2000):

> Whilst the Internet offers potential for extending scholarship and for exploring different ways of communicating in a radically different medium, the medium itself raises issues about the conduct of research with human subjects. For example, the Internet provides the opportunity for both researchers and their subjects to assume anonymous or pseudonymous on-line identities which obscure demographics such as gender and age, which may be of importance to the investigation. Furthermore the changing membership of Internet communities creates difficulties in obtaining informed consent from subjects, some of whom may be minors, and the uncertain distinction between the public and private domains causes confusion and possible harm for those many subjects who hold illusory and unrealistic expectations of privacy …

> Anonymity has a further impact on on-line research in respect of the validity and reliability of the data collected, for amongst the widespread geographical and diverse population of the Internet it is easy to conceal and mislead others about one's true geographical location, gender, or race. And, as Waskul and Douglass (1996) point out, the well-documented existence of a racial, economic and gender divide amongst Internet users will continue to skew and compound the issue of non-representative sampling, with the potential for misleading findings. Resolution of these sampling issues is critical to the conduct of certain categories of on-line research.
>
> (Roberts 2000)

But it is equally true that online surveys can, in certain circumstances, reduce anonymity: where surveys are returned by email, for instance, it is necessary to detach the data from the email message in order to obscure the sender's email address.

A further matter which is noted but insufficiently addressed in the literature is that of the barriers to access which the adoption of online delivery methods may present. While online learning is promoted as offering flexibility and access, there are potential participants who are unable to benefit from it. An EVAG (EdNA VET Advisory Group) project (Connelly et al. 2000) lists the following barriers: technology, especially cost, particularly for remote and isolated areas and for learners with disabilities; cultural and linguistic issues; access to technical support; access to teacher support; also the need for professional development 'for managers, teaching staff and policy makers to demystify the concept and ramifications of online learning'. This is a serious question, which the researchers in the current project can only approach in a sidelong manner, but it is one which ought to exercise the minds of researchers and policy-makers for some time to come.

Summary

In this chapter we have attempted to look at the boundaries that define the online learning experience, and have incorporated both purely online study and a variety of mixed or hybrid modes. The majority of commentators take the online experience to begin once enrolment has taken place, and to conclude upon the completion of assessment.

The various policies, planning models, frameworks and overviews examined, list many factors considered as contributing to good practice. These generally have in common, ideas related to the support of learners, catering for the varied needs of learners, skills and professional development of staff, suitable administrative procedures, interaction and communication, and evaluative activities.

Literature relating to the evaluation of online experiences reveals both positive and negative aspects. The positive aspects included an appreciation of the potential of technology to remove barriers to study and to enhance flexibility, and in some cases to add richness and depth to the learning experience. The negative aspects included frustration with technology that did not work well, and a preference among some students for learning face to face. However, few general trends could be drawn from this area of the literature, indicating that evaluative studies of particular programs do not isolate the quality factors sufficiently to draw conclusions.

Nevertheless, enough data were obtained from the literature to enable the researchers to propose a list of quality factors for use in the study.

Research methods

This research aimed to elicit learners' views into what constitutes quality in online learning and to put those views into context by comparing them with educators' views obtained by means of case studies of VET organisations. VET organisations were approached to participate in the study. The aim was to link the students from participating organisations to the online questionnaire and to offer participating organisations the option of being the subject of a case study. Case-study organisations would provide information about their organisation, and the educators and/or students from that organisation would participate in focus groups.

The educators who participated in the study included teachers, managers with responsibility for online education, technicians, librarians and developers of online resources. In the latter category some of the developers were previously teachers who may have changed roles completely or have been on secondment to work on an online project, or both teaching and developing at the same time. Some of those who responded as learners, were also educators, but were undertaking online study.

The study uses both qualitative and quantitative methods. The quantitative data have been obtained online through an online questionnaire, which can be found at http://online.tafe.swin.edu.au, while the qualitative data have been gathered at focus groups, and through interviews. A couple of questions in the questionnaire have provided open-ended responses, which have enriched the quantitative data.

Questionnaires

The survey instruments developed by the researchers were considered and accepted by the Swinburne University Ethics Committee. Demographic questions were asked with a number of direct, open-ended questions on the 'quality of online learning'. The open-ended questions have provided some very useful data in analysing what is important to students in relation to quality online learning. Forty-eight Likert-type questions (reducing to 47 after the pilot analysis) formed part of the questionnaire and were supplemented by six Gap analysis questions for the main study.

The Likert-type scale proposes a series of questions on key issues in online learning, and respondents are requested to specify whether they strongly agree, agree, disagree, or strongly disagree. These questions are useful for understanding degrees of importance of various aspects of the online environment.

The Gap questions propose a statement about online learning and the respondents identify how important that particular aspect is to them on a five-point scale, and then rate their online experience for that aspect. This provides data which give a quantitative value to the importance of various aspects of online learning, and how the unit rated against these indicators. Both the Likert and Gap questions provided a useful tool to compare student and educator opinions on set questions.

The questionnaire was tested and analysed through the pilot study which comprised 55 student returns and five educator returns. The analysis of the instrument is attached in appendix 1. The survey instruments were refined in the light of these analyses. The online questionnaire can be accessed through http://www.tafe.swin.edu.au/ncver

The survey

Questionnaire responses were received from 412 students, 55 in the pilot and 357 in the main study. The aim was to reach 5000 students in the main study with a response rate of 10%, getting 500 responses to analyse. The questionnaire site was reached more than the 5000 times but there is no way of determining how many of these were duplicate hits. The actual questionnaire was opened a total of 1852 times which is considerably lower than the hoped-for 5000, but the response rate, at 19.2%, was almost double the expected rate.

Table 1: Summary of main survey responses to questionnaires

	Students		Educators		All	
	Number	Response rate (%)	Number	Response rate (%)	Number	Response rate (%)
Site hits	31 816	1.1	31 816	0.2	31 816	1.3
Questionnaire opened	1 852	19.2	556	11.3	2 408	17.5
Responses	356		63		419	

Data analysis

The data from the online questionnaire have been analysed to provide demographic information, information on quality online learning as well as Likert question analysis and Gap analysis of critical questions.

The main study data set can be viewed at http://online.tafe.swin.edu.au/quality/view.cfm

The total student data set of 412 responses, consisting of 55 pilot and 357 main study responses, produced 388 useable sets of data. Twenty-four sets of student data were discarded. Null responses and multiple responses were removed from the analysis. Multiple responses were defined as identical responses to all questions received from the same internet service provider (ISP) location within a time span of one minute. Only one of the multiple responses was left in the data analysed; the other copies were discarded. These multiple copies were assumed to have occurred through the vagaries of the technology.

The percentage of participants who indicated they had experienced quality online learning was calculated and analysed for the whole sample as well as for different groups of students. This provided some useful comparisons assisting the researchers to understand what constitutes quality online learning.

The open-ended questions were individually analysed and sorted into the categories comprising the total picture of quality. This was done for both students and educators.

The Likert scale questions and Gap questions provided data on the importance of different aspects of the online environment and how the actual experiences compared with the importance students placed on it.

Researching online learning online

The decision to administer the survey online was based on the appropriateness of this medium to capture learners who are studying online. At the time the research began this was a relatively new research technique and therefore of interest to the National Centre for Vocational Education Research (NCVER).

A graphic link and a pop-up box were prepared which could be attached to course materials of the participating organisations to link them with the questionnaire. This required some online expertise and technical support at the survey site, which was sometimes difficult to organise. Once the link was made, access to the questionnaire was easy. An alternative approach was to provide the students with the web address of the questionnaire for direct access. To help in the process, the research team produced thousands of cardboard bookmarks containing the web address and other contact details, which were handed to students, educators and other interested parties.

Online questionnaires have now become a common method of data collection, particularly for market research (Bez 2001). Market researchers and program evaluators are finding the online medium provides greater reach and a greater return rate. Where a paper-based questionnaire now attracts a return of 4%, an online questionnaire attracts a 12% return from direct email contact and will often get more if the participants are interested in the outcomes of the survey. This is without the provision of incentives (Bez 2001).

There are benefits to be gained using an online questionnaire. For people using the online medium, an online survey is quick and accessible, and there is an immediacy about it, an attraction for many respondents, in that it eliminates paper and postage and handling. The data are automatically fed into a database. Because data entry is thus eliminated, errors in this part of the procedure are obviated, and considerable time is saved for the research team.

The limitation of using an online questionnaire is that the student data are obtained only from students who are still studying online and who can manage the online medium with a certain degree of confidence. The scope of the research did not include students who have dropped out, nor students who might have liked to study online, but for one reason or another, did not enrol or did not start. The sample is therefore skewed not only to those students who are studying online, but also to those students who could be accessed and were then willing to participate. Almost all of the student data have been obtained by questionnaire. While considerable effort was expended into trying to set up focus groups of students, only seven students have been personally interviewed.

Accessing students

It is difficult to access students in the VET sector. The proliferation of research projects and the surveying of students through quality systems have resulted in students being both weary and wary of questionnaires. VET organisations do not have any obvious system for providing data and participating in national research. Formal requests are passed through the organisation in various ways, and in many cases it is a matter of chance whether they reach someone who is both able and willing to help. Researchers are constantly relying on favours from people who are already overworked. The research team for this study had mediocre results from official requests, and much of the data (both quantitative and qualitative) were obtained as a result of informal approaches to personal contacts. This is not to say that organisations or staff were unhelpful; more that staff and organisations are over-burdened by the number of research projects, as well as by the requirements of state and national reporting.

A pilot study of 55 students was carried out in October–December 2000 using just one organisation. The aim had been to involve more organisations at the pilot stage, but this proved impossible to achieve. The difficulties in collecting data nationally through many organisations started to become apparent at this stage. Data collection nationally began in earnest in February 2001 and continued until the end of November. It has been a difficult and slow process.

Three-hundred-and-fifty-seven students and 63 educators responded to the main survey. Students were contacted through teachers in their organisation, through distance education co-ordinators or by being presented with a pop-up-box when they logged on to their online course. The excellent response in Victoria is partly due to the pop-up-box appearing on the TAFE Virtual Campus and partly to the closeness of the researchers to the sample.

A large amount of data has been gathered, not all of which can be analysed for this study. The researchers suggest that NCVER might consider continuing data collection via the online questionnaires, as the basis for a longitudinal study which explores whether views about quality change as learners become more experienced in online learning, and as organisations become more experienced in this method of delivery.

Factors contributing to the diminished size of the data sample

- The method of approaching organisations was not particularly successful and was very time-consuming. It resulted in a considerable time delay and the commitment of organisations to the project became diminished with each step between them and the researchers.
- Organisations are so busy that requests through directors often become lost or diluted before reaching the appropriate area. This approach has not worked successfully with any organisation. In some cases, a negative response from the organisation about participation in the case-study research has resulted in as many student responses as those which have enthusiastically agreed to participate in the research.
- It is essential to keep close to the data collection. While online data collection is very convenient, the need or desire for students and educators to respond to the online questionnaire diminishes with the distance from the researchers. It is therefore important to establish and nurture contacts within the organisation who can provide a direct link to the students, so that they can be actively encouraged to respond to the questionnaire. This may be directly with teachers or with the distance education unit in the organisation. Often those responsible for online education within the organisation are also distant from the students who are studying online. This adds another dimension of complexity to reaching the students.
- Students and organisations are over-surveyed. There is a very definite reluctance to complete yet another survey. Ethics approval meant that there could be no financial incentives for students or educators to complete the questionnaire. This poses a difficulty when contrasted to market researchers who will pay up to $50 to someone to complete a survey.
- The introduction of training packages in some areas, especially computing, has resulted in fewer online resources being available and therefore fewer students studying online. Teachers stated that, for this reason, they have not been able to enrol as many online distance students in computing in 2001 as in the preceding years.

The researchers suggest that, in the future, research teams are represented by all the organisations which are providing the research data. This would maximise their co-operation in obtaining data, maintain researcher closeness to the sample, and achieve a common goal for researchers and their students.

Interviews and focus groups

Focus groups were organised in different states to provide in-depth data on quality online learning. These focus groups consisted of educators who willingly shared their experiences with online education, discussing aspects of online learning believed to be essential to ensure its quality.

Interviews and focus groups provided substantial qualitative data from the perspective of the educator. Educators' focus groups have been conducted at Canberra Institute of TAFE in the Australian Capital Territory, at Swinburne University TAFE Division and Acenet (a collective of nine providers of ACE located across central western Melbourne and regional Victoria) in Victoria, and at Southern On-line Institute of Technology, Toowoomba campus, and Tropical North Queensland Institute. A group of educators from different organisations formed a focus group in South Australia. Individual educators were interviewed at Southbank Institute of TAFE, Queensland and by teleconference with Mt Isa TAFE. Efforts were made to set up focus groups in Western Australia and New South Wales, but the project was not successful in achieving this.

Focus groups and interviews with educators were carried out using convergent interview techniques. The participants were in each case asked to discuss the subject of quality in online learning in general terms, and were then asked to list and rank their top five factors implying quality.

The initial questions and follow-up questions were based on the questions below.

1 Could you please describe your involvement with online education?

2 What factors do you consider critical to enable students to have a quality online learning experience?

3 Why are these factors important?

4 What do you consider the five most important factors for quality online learning?

5 List these factors in order of priority and justify your selection and ranking.

Case studies

Case studies were designed to obtain information relating to quality online learning from organisations. The organisational perspective would provide one facet of the quality picture and could be compared with the student perspective. However, the research team encountered significant difficulties identifying organisations willing to participate as case studies. There is a perception within the VET sector that organisations are at the start of their quality journey in online education and did not feel ready to participate in this project.

In many cases there was a lack of congruence between organisations willing to provide case studies and those where students actually responded to the questionnaire. This meant it was impossible to reach a correlation between organisational perspectives of quality and the student perspectives on quality online learning in those organisations.

Demographic span of data

Introduction

The pilot study ran from October to December 2000 with the main national survey taking place from February to November 2001. The pilot study received 55 responses from students and 5 from educators, while the main study received a total of 420 responses, with 357 responses from students and 63 responses from educators, giving a total of 412 student responses and 68 educator responses over both studies.

Some of the data were not useful: there were some cases of multiple identical submissions from the same person at the same time, an obvious technical hitch. There were also some null data, test cases where students were trying out the system and cases of made-up information where the courses and organisations did not exist and the responses did not pertain to online education. These data were 'removed' before the analysis was carried out. Twenty-four student responses and five educator responses were discarded.

Table 2: Summary of useability of responses

Responses	Students		Educators	
	Actual	Useful	Actual	Useful
Pilot	55	55	5	5
Main	357	333	63	58
Total	**412**	**388**	**68**	**63**

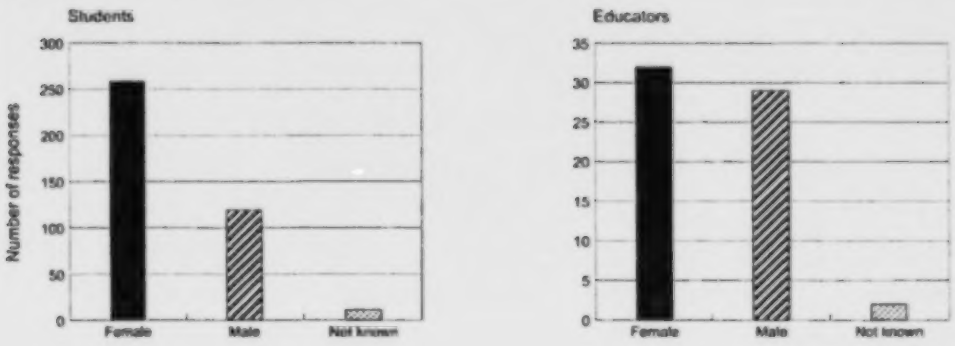
The focus of all the questions was to determine whether students felt they were getting a quality online learning experience. The next step was to tease out exactly what constitutes quality online learning. The learners did not have to be distance online students: all students who were learning through the use of the online technologies were included.

The data spanned a range of ages, courses and discipline areas and have produced some interesting results which are displayed below. A gender analysis supports anecdotal reports that there are more female than male online students. The student numbers were decisively biased towards females, but the educators' responses are fairly evenly distributed.

Gender distribution

There were more females students responding to the questionnaire than male students and more female educators who responded over both the pilot and the main study.

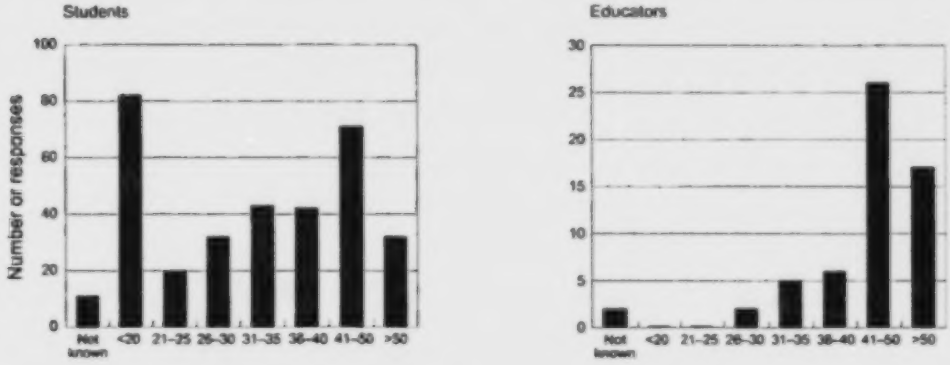
Figure 8: Gender of respondents



Age distribution

There is a peak in the student population in the under-21s, and as expected, there are no educators in this age bracket. However the next peak matches: the greatest number of educators lies in the 41–50-age bracket which is the same age range as the second peak in the student distribution.

Figure 9: Age distribution of responses to the questionnaire



Location distribution

The majority of the students who responded to the questionnaire are from Victoria. While considerable efforts were made to attract participants from other states this was not achievable. Numbers of participants from New South Wales and South Australia were disappointingly low.

However, the educators in New South Wales were valiant in their efforts to get more students involved and a large number of them responded to the educator questionnaire (see figure 10).

Student characteristics

Generally speaking the computer skills of the students were high. Figures 11a–c summarise their description of these skills, showing their comfort level with online learning, employment status and experience with online learning. These were specified through a sliding scale which corresponded to a value from 0–5.

Figure 10: Distribution of responses across the states

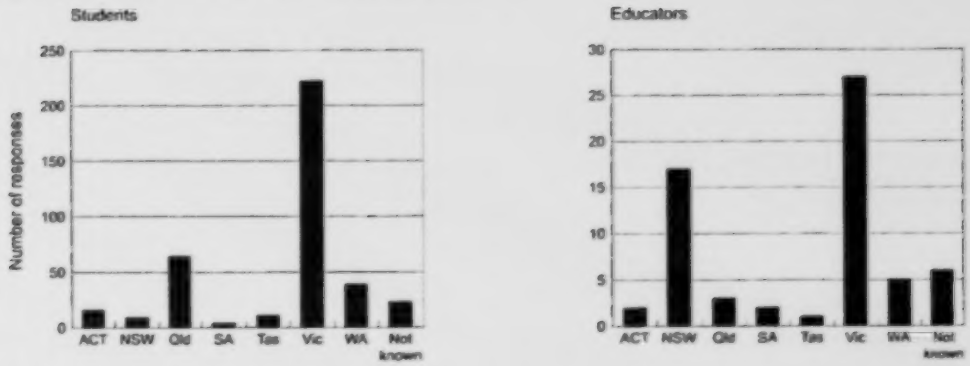


Figure 11a: Computer skills and comfort with online learning

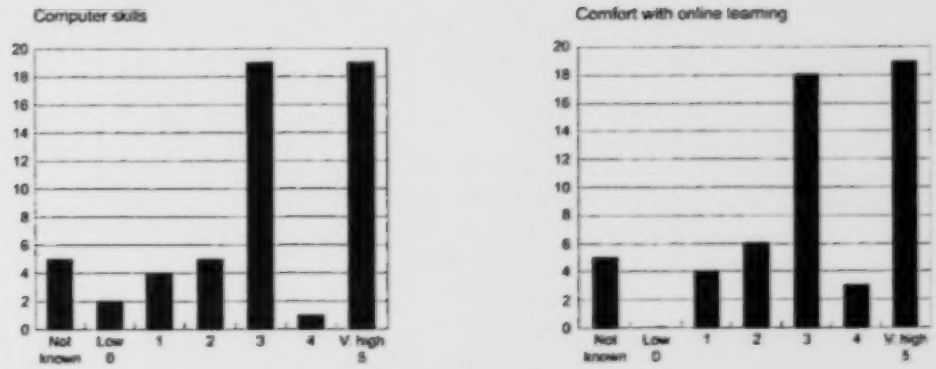


Figure 11b: Employment status

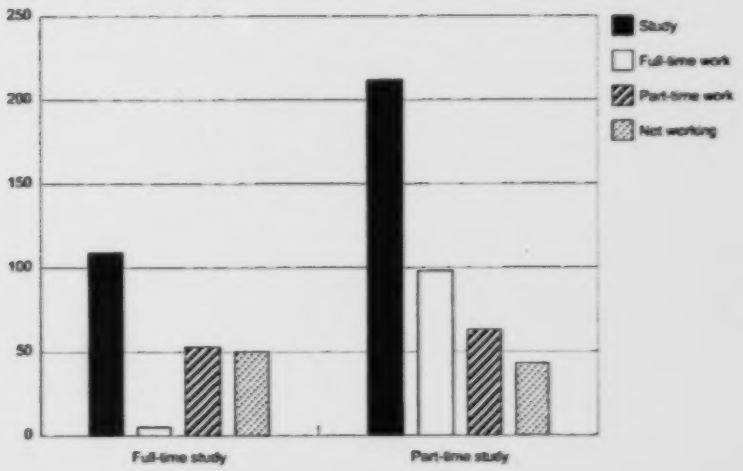
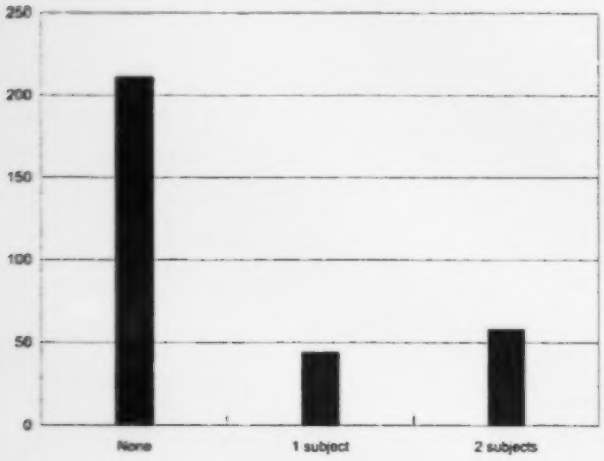


Figure 11c: Experience with online learning

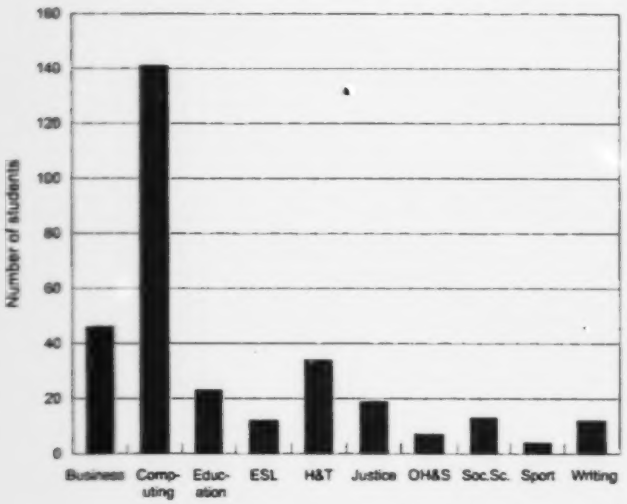


Courses

There was a wide range of courses in the sample of student responses. Computing courses comprise most of the online delivery and accounted for 42%. The education courses included the professional development courses of Teaching and learning online (TALON) and also Workplace trainer and assessor. Hospitality and tourism courses (H&T) were well represented. The social science (Soc Sc) courses included the Community services courses in Aged care, Children's services and Disability as well Social sciences communication and Liberal arts. The Writing courses were mostly not related to a specific Australian Qualifications Framework (AQF) course.

Besides these groupings there were responses from individuals or a couple of students studying in a range of different courses including, Aerospace engineering, Building code of Australia, Painting, Horticulture, Master class marine, Microbiology for the Diploma of Confectionery Making, Hairdressing, Firefighting operations and Aquaculture.

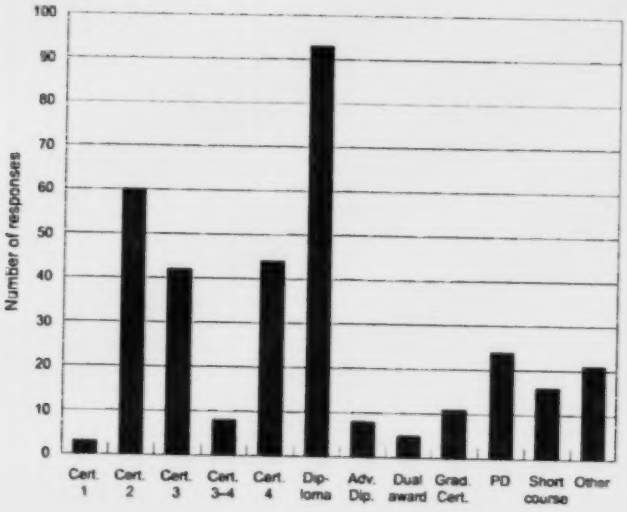
Figure 12: Course distribution for students responding to the questionnaire



Levels

Students were distributed across most levels of the AQF, with the majority of students at the diploma level and only one student at certificate 1 level. Some of the students were in single subjects and not enrolled in specific course levels, others did not specify their level of study. Some people were undertaking the course for professional development purposes. These were mainly teachers taking units in TALON or the Certificate in Learning Technologies, which is a specially packaged certificate 2 for Education Department teachers in Victoria who needed some appropriate professional development to be eligible for a laptop computer.

Figure 13: Student distribution against AQF level



Quantitative data from the national survey

The online surveys sought information about specific aspects of online learning by means of Likert-type scale questions, Gap analysis and open-ended questions on quality learning. Both students and educators answered the same questions; thus a comparison between the responses was possible.

Likert scale analysis

The Likert-type scale poses questions which ask for responses such as a 'strongly agree', 'agree', 'disagree', 'strongly disagree' and 'uncertain'. Full details of the questionnaire can be found in appendix 1, and the detailed analysis of the results from the questionnaire can be found in appendix 2.

These Likert-type scale questions were grouped into the following areas:

- ✧ online education
- ✧ online communication
- ✧ online materials
- ✧ online support
- ✧ online assessment
- ✧ online technology.

The group of questions which addressed online education generally are directly related to the online learning environment, and probe learners' preferences relating to the online environment and the traditional face-to-face classroom environment.

Online communication explored communication through the electronic medium, such as chat or email. Aspects of this type of communication have been mentioned in the literature, specifically the time students have for reflective comment, and the freedom for students to make comments.

Students use online materials quite differently from the way they use printed materials, and these questions explored the importance to students of characteristics of online materials such as the interactivity and the nonlinear nature of the resources.

The questions investigating online support examined student attitudes to support and the need for induction, online help, support from teachers, support provided by other students and online library services.

Assessment online provides many challenges: the type of assessment that is appropriate, the interaction with the computer, the speed of receiving feedback as well as the validity and reliability of assessment through the online medium. These questions were designed to shed some light on these issues.

The set of questions on technology explored issues relating to access to technology and software, ease of use, and speed of downloading information.

Quality online learning—the student's perspective

The majority of students indicated they were receiving a quality online learning experience: 71% of all students responded that they were receiving a quality online learning experience; 18% were not experiencing quality online learning and 11% left the question blank. Discarding the blank responses, 80% of all respondents to this question were positive.

Table 3: Respondents reporting quality online experiences by number and percentage

	Yes	No	No response	Total
Total sample	295	69	50	414
Percentage	71	17	12	100

The students were very positive about the flexibility, freedom and convenience of the online environment, but quite clear that they did not prefer it to face-to-face classes. They were neutral about which form of education took the most time. They were not studying online just because they could not get to class and they did not miss the discipline of getting to class. They considered that they needed to be more organised to study online than in class.

Flexibility

The most positive aspect to online learning was the flexibility it offered. All forms of questioning and analysis brought out flexibility as the number one indicator. Within flexibility there were different aspects, and these all emerged as being important to students and equally recognised by educators. The most strongly agreed with statement in the Likert-type scale was:

- I like the freedom of learning online.

The following statement was the third most agreed with:

- Learning online is more convenient for me than attending classes.

Students valued all the aspects of flexibility.

There was no evidence that programs are customised for different students. The 'just for me' element of flexibility was missing. However, what did come out clearly was the benefit students saw in being able to determine their own pace of learning. Some students wanted to speed through the work, while others wanted to reflect and assimilate information at a much slower pace.

Style of learning

The online medium provides flexibility in the style of learning. Students liked the flexibility of the web and the ability to have a large amount of information accessible at the same time. They did indicate that they liked sequential study, and appreciated having a subject map so they knew what they had to do and how all of the information fitted together. However there was no evidence that programs are customised for different students, so that 'just for me' is very limited at this stage.

> It was really great to be able to have many pages open at the same time and this helped me learn the subject.

Communication

Students were neutral about the communicative potential of online study. They felt that it gave them more time to reflect, but had no overall opinion about how worthwhile it was. Students relied on the relationship with their teacher and the teacher–student interaction far more than on the student-to-student interaction. Learning revolved around teachers. They saw email contact with their teacher as fast and efficient, but they did not interact more with other students online than they did in class. Educators valued the communication aspects more highly than did students. They have realised the potential for online communication to contribute substantially to online learning. These responses would indicate that the community-building aspect of online communication is in its infancy in the VET sector and certainly has not reached its potential.

Materials and content

Online interactive materials were very important to students and they accessed more learning resources online than when studying in class. They found their materials easy to follow, easy to understand and more up to date than class materials. The second most strongly agreed with statement in the Likert-type scale was:

- When I'm studying online it is very important to have interactive content.

Online materials were often considered to be very easy to understand, but the students still needed very clear instructions as to what was expected of them. They needed to be told what to do with the materials. In this area the educators were in strong agreement with the students.

Support

Students did not indicate that they needed a lot of support to study online. They considered support and administration significantly less important than technology, communication, resources, assessment and flexibility. This was the area of most difference between students' and educators' perspectives. Educators thought students required and would want far more support than the students indicated they would want or need. Students thought induction was important, but reported that no one had checked their skills before they started. They did not have ready access to online help and wanted a real person to help them, rather than a computer screen.

Assessment

Online assessment was of some importance to students. They were happy to have a computer checking their work and were neutral about the validity of online assessment and the ease of cheating online. These questions did not explore the aspects of downloading assignments and submitting work, critical problems identified by students in the open-ended questions.

Technology

Somewhat to the surprise of the researchers, students' attitudes to the technology were predominantly positive. They did not find getting into the system so difficult as to deter them from online learning. They were not annoyed with the course because web pages took a great deal of time to download. The technology was not confusing. Online links did not always fail. They had easy access to the hardware and software and satisfactory access to the internet. While respondents experienced problems with technology, only 25% reported these difficulties. Respondents overall were more positive than negative about their access to the internet and the associated technology. However, when the technology does not work well, it detracts significantly from the quality of the learning experience.

Approximately 25% of the students had problems with the technology. These students were quite vocal about their problems. Nevertheless, it is worth remembering that there were 75% students who were relatively positive about the technology.

Gap analysis

A Gap analysis was carried out to determine how the online learning environment was performing compared with student expectations. Each comment requires two responses: how important that aspect of online education is, and how the online unit rates with respect to that aspect. This provides a quantitative measure of the gap between the importance of the different aspects of online education to students and to educators, as well as identifying the standard of the actual online provision.

This analysis has also been useful in directly comparing student perspectives with educator perspectives.

Students' perspectives

The key statements were concerned with flexibility, communication, support and administration, assessment, technology and access. All these aspects were considered to be very important for students, with the exception of support, which was just important.

The online unit was rated as between medium and high for all areas with the exception of flexibility, which was closer to very high. Flexibility has been important for providing quality online learning and this is the area where the flexibility provided was closest to the importance for students. In no areas did the performance exceed the importance to the students.

The largest gap was in prompt technical help in the case of computer problems, where the service provided is of medium standard. Many of us who have been frustrated by the lack of technical support when required would be surprised that this area rated as high as medium.

From the Gap analysis order of importance is:

1 Technology
2 Assessment
3 Communication
4 Flexibility
5 Support.

Ratings of quality in the units studied were as follows:

1 Flexibility
2 Technology—with the exception of access to technical help, which rated worst of all the aspects
3 Assessment
4 Communication
5 Support.

Educators' perspectives

The educators' perspectives were not dissimilar to those of the students. They consider everything except support and administration very important. Support and administration only

rate as being of some importance, and this area had the smallest gap between importance and how the unit rated along with flexibility. Flexibility is important, and online education is actually seen to be very flexible. The largest gap was in the technology area where the online units of study only had a medium performance.

Students and educators—a similar view

There is very little difference in the importance that students and educators place on the various aspects of online learning detailed above. The importance for students was marginally lower in most cases (the exception being in support) than the importance to educators. Support and administration was the lowest area of importance for both groups. In all cases the unit rated less than its importance. This was true for both students and educators for all questions. While support and administration scored the lowest value, it was also the least important aspect for both groups. Technology was the most important with mixed ratings and flexibility rated best.

What students and educators are saying

The focus of all the questions was to determine whether students thought they were receiving a quality online learning experience; the subsequent aim was to tease out exactly what constitutes quality online learning. The learners surveyed included students who were learning through the use of the online technologies whether at a distance, on campus or elsewhere.

The open-ended questions asked specifically about the quality of online learning: 'Is this unit providing quality online education?' What factors (if any) have made it a quality learning experience?' 'What problems (if any) did you have with studying the unit online?' and 'What changes need to be made for it to provide quality online education?'

Students' perspectives

Definitions of quality online learning are as varied as the range of different learners that are studying online. Further definition of quality can be derived from the factors listed against question 2 in the interview schedule.

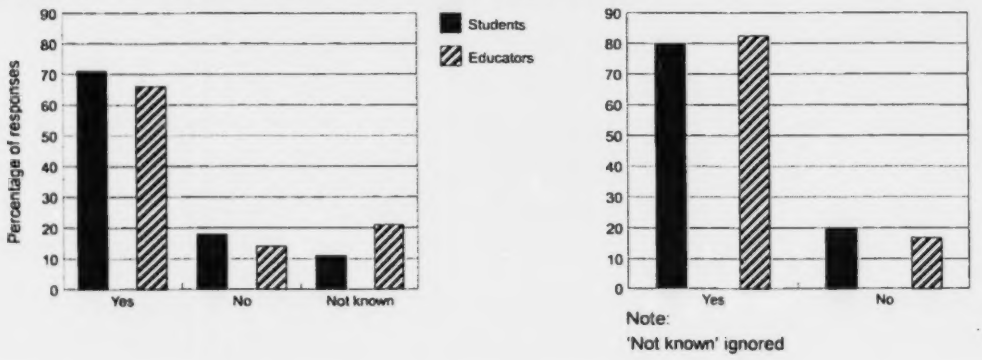
A quality online learning experience is one that provides flexibility and reliable technology. Flexibility not only includes the choice of time and place, but should include options for face-to-face interaction as well. There is also the added flexibility of pace—choosing to go fast or slow, tackling a lot or just a small segment at any one time. Some students were very aware of what they needed to learn, and for some, the online environment was one whereby they could undertake the learning they wished.

As noted earlier, teachers contribute significantly to the quality of online education. Furthermore, quality is achieved when there is a match between the learning experience and the learner's expectations. The online medium provides an avenue for quality learning experiences, but there are standards which must be achieved for all aspects including assessment and timely feedback.

Educators' perspectives

Educators were asked if they thought that students were receiving a quality learning experience online. Sixty-five per cent of the educators believed that students were getting a quality learning experience online, 20% thought it was not a quality online experience and 15% did not give an opinion.

Figure 14: Comparison of students' and educators' reports on quality



Factors for quality

The foremost quality factor has been flexibility and convenience, with teacher responsiveness being a very important second. The eleven outstanding factors are listed in table 4.

Table 4: Quality factors

Areas of quality	Student responses	
	Number	Percentage
Flexibility/convenience—time, place, pace	79	24
Interaction with teacher	50	15
Quality of materials and course design	48	14
Access to a wide range of online resources	29	9
Online assessment and feedback	22	7
Uses/improves computer/online skills	19	6
Learning style, reflection, multitask, independent learning	19	6
Interaction with other students	18	5
Communication—email, chatrooms	16	5
Ease of use	11	3
Hybrid—balance of face to face and online	9	3

Flexibility

The flexibility provided by online study was very important to the students. The following responses were received from students via the free form question of 'What factors (if any) made it a quality learning experience?' Several aspects of flexibility were significant: place, time and pace, the latter enabling time to reflect and to prepare.

> Accessibility after hours, flexibility, repetition when I need it.
>
> I work full time on a rotating shift so I can't get to classes on specific days at specific times. Doing an online course—it's easy for me to work when I am free.
>
> I can work as I learn and learn as I work.
>
> I can choose when I do modules and I can finish them quicker than the allotted time.
>
> It's convenient as I have small children.
>
> I can work at my own pace from home.
>
> You can continue just where you left off.

No rush. Took my time.

Having the freedom to choose when I have time to study and not having to keep to a timetable has been a great benefit to myself.

Teacher responsiveness

Students were very appreciative of their access to the teacher. They liked email contact and the help provided through the online medium. A sample of their responses in relation to this factor can be seen below.

A resourceful and responsive teacher online.

Prompt help from my teacher.

Accessibility to the teacher when needed.

Facilitation by an expert who is experienced at knowing how to structure/restructure, lead, push, pull and follow at appropriate times and takes a personal interest.

Good facilitation.

Great tutor.

Feedback and mentor support were also very important, whether from the teacher or from other students. Timely response and feedback are vital. The positive comments are presented here, but there were also negative comments about lack of response which are discussed later in the report.

Good feedback from teachers—helpful communication from teachers in response to problems.

The lecturer was supportive of the task I was undertaking and responded quickly and positively to a couple of my panic emails.

Speed of reply to questions.

Resources and content

There were many very positive responses about content, links and access to other materials. The internet offers access to an extensive range of information. While some students found this daunting, others really appreciated the richness of resources they had access to. The online content was often noted as being very good. Aspects of the design of materials are extremely important: when it is right, students are delighted, but when it is not good, they become very confused. There were quite a few requests for more courses online. Positive comments included:

The course content is very good.

Quality of course material online with hyperlinks to other sites.

... a large choice of related links and quick access.

One student wrote:

I was apprehensive in the beginning but the course really gave me a lot of information and resources on the web that I learnt from without needing books offline.

Assessment

Online assessment provided some exciting challenges and speedy feedback that were appreciated by students. However, lack of timely feedback was the third most common reason for dissatisfaction. Clearly, the medium provides an avenue for quality online learning, but standards must be developed for assessment. Some of the positive experiences that learners thought contributed to quality learning follow:

Challenging practical assignments.

Easy access to tests.

Automatically corrected tests.

Tutors easy to message or email, response time has been good.

Improving computer and internet skills

Some students found the online course provided them with the opportunity to improve their computer and internet skills. This aligns with the Commonwealth Government 'Clever nation' policy and initiatives at state and territory levels. These views were well summed up by the following statement, one of quite a few similar responses:

> Gives us a chance to enhance our skills using the computers and the internet.

Learning style

From an educator's perspective, it is very interesting that many students commented on their style of learning with respect to the online medium. The fact that students are reflecting on this is very encouraging, since it indicates not only a wish to learn but also an awareness of ways in which learning takes place. A total of 14 students stated how online learning suited their learning style. This is 4% of the responses, although many responses commented on more than one aspect of quality. The specific aspects of learning style mentioned were:

- independent learning (3)
- self organisation, motivation—self-pacing (3)
- time to reflect (2)
- my commitment (2)
- new challenges (1)
- forcing me out of my comfort zone (1)
- multitasking (1)
- responsibility for own learning (1).

Interaction with other students and communication

While communication facilities such as web discussion boards, email and chat have provided a much-appreciated dimension to online learning, the acknowledgement of the benefits of this form of interaction with other students was not as high on the list as might have been expected from the literature. The reason could be that these methods are still in their infancy in the VET sector, or it may relate to the particular learning modes of VET students, and how they view interaction with other students.

> Ability to share knowledge with other students.
>
> Discussion boards where you can see answers to questions and help others in need.
>
> The fact that you can speak to class mates through the chatting rooms and conferencing rooms.

Ease of use

Some students commented on how easy it was to use the online medium. In the pilot study, novelty and variety had been prominent factors, but fewer remarks on the newness of the medium were made in the national survey.

Hybrid delivery

The balance between face-to-face and online delivery and the benefits of hybrid or blended delivery will become more apparent in the VET sector as the use of information communication technologies (ICTs) becomes further integrated into delivery. In this survey, nine students commented on this mix as being a critical factor for quality. Many students commented on the importance of interaction with teachers. Combining this with the flexibility desired might best be done through a hybrid model of delivery. As one student noted:

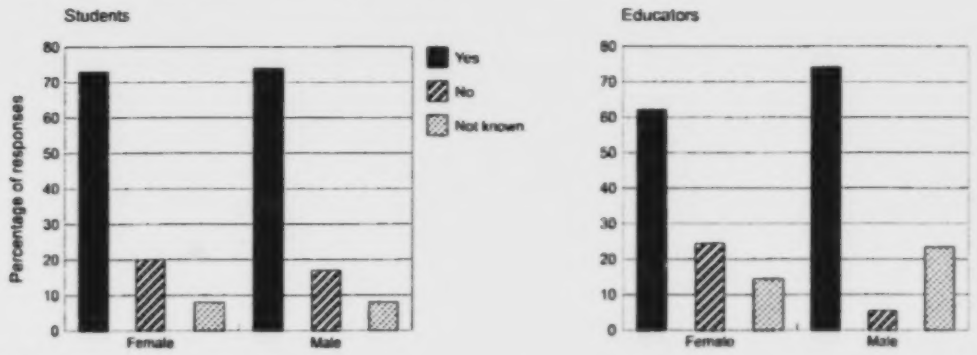
> A highly interactive course that has a good balance between online and [face to face].

Factors for quality in different groups

Quality according to gender

The quality experience was analysed for different groups of students. It is noticeable that more students considered they had experienced quality online learning than the educators expected students would have received. There was no significant difference between male (73%) and female students (74%) with the views of male educators being the same at 74%; but only 62% of female educators expected that students would report quality online learning experiences. Most of the respondents who did not disclose their gender did not express an opinion on quality. Ignoring the blank responses, 79% of female students and 81% of male students believed they were getting quality learning online.

Figure 15: Quality in online learning, by gender



Note:
Yes – getting a quality experience; No – not getting a quality experience

Issues for quality

The top factor for quality for female students was flexibility, with 31% of the sample specifying this as one of the features constituting quality. This was also the main feature for the male students at 25%.

The main areas of difference between the genders were that flexibility mattered more to female students than males, as did interaction with the teacher and with other students. After flexibility, more males specified quality of materials as a quality factor, where the course design mattered more to the females than the males.

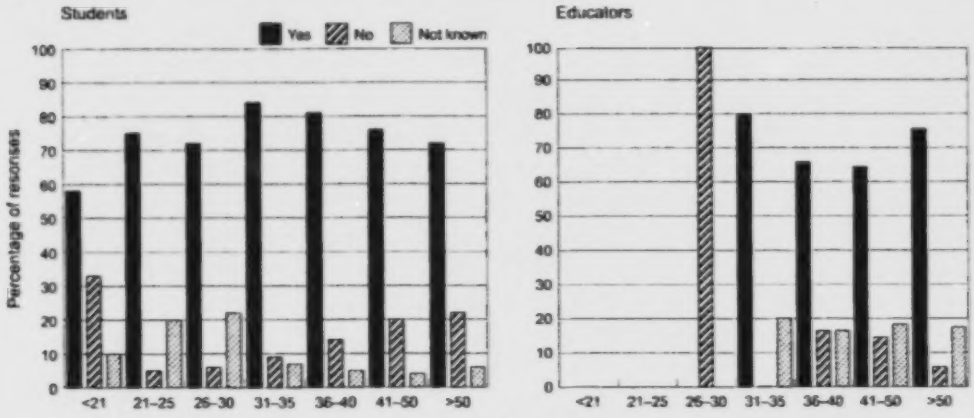
Table 5: Quality factors by gender

Areas of quality	Female %	Male %
Flexibility/ convenience—time, place, pace	31	25
Interaction with teacher	22	10
Access to a wide range of online resources	12	9
Quality of materials	13	14
Course design	5	3
Online assessment and feedback	9	7
Uses/improves computer/online skills	7	8
Learning style, reflection, multitask, independent learning	7	6
Interaction with other students	8	4
Communication—email, chatrooms	6	5
Ease of use	3	8
Hybrid—balance of face to face and online	4	3

Quality according to age groups

The data in figure 16 present responses on quality according to age groups. The percentage has been calculated across the whole sample as well as including only those who presented an opinion. It is worth noting that most of the online learners are either under 21 or over 41.

Figure 16: Perceptions of quality by age, by percentage



Younger students were more critical of online learning than were the older students. Only 60% of the 21-and-under students felt they had had a quality online learning experience. This is particularly interesting, as we think of young learners as being competent and familiar with the medium: they should not be as adversely affected by technical hitches as students who are not familiar with the technology. This figure may indicate that the students are not mature enough to cope with independent learning, but it could also indicate that those with greater facility with the medium may have higher expectations.

For students under 21 the prime area of quality was flexibility (11 specific comments). Course content (6) was the second area. However, when considering what made the learning experience unsatisfactory, this group claimed access problems as their number one concern with 13 complaints, followed by self issues (6) and lack of support, confusing, assessment problems and

the need to have help on hand (all with 5 responses). The issues relating to self were lack of motivation (2) boring (2) and laziness; for example:

> ... you can get a bit lazy if no one is telling you what you have to do.

In the 41–50-age-group the students still nominated flexibility as the number one factor (22), but it was followed closely by interaction with the teacher (19). Then came course content (8), access to information (8), feedback (6) and chat rooms (5). It would appear that the communication aspects of the online environment worked well for this age group.

Neither of the educators in the 26–30-year-age group who responded thought that students were getting quality online learning; four of the five of the educators in the 31–35-year-age group offered a positive view, while the fifth did not express an opinion.

The educators in the 26–30-year-age group stated that access to information and course content were quality factors. On the negative side, however, they reported that some materials are no more than print-based text dumped online, that online chat was not available and that the materials did not take into account the computer skills (or lack of them) of the learner.

The educators in the 31–35-year-age group mentioned the importance of high-quality learning materials, the importance of engaging the learners, understanding the virtual environment, collaboration and effective communication.

Students' responses to quality by course

Figure 17 shows participants' responses to the quality of their online course. For example, 70% of students undertaking a business course believed they received a quality experience online; 15% believed they did not, while 15% was not known.

Figure 17: Percentage of respondents by course

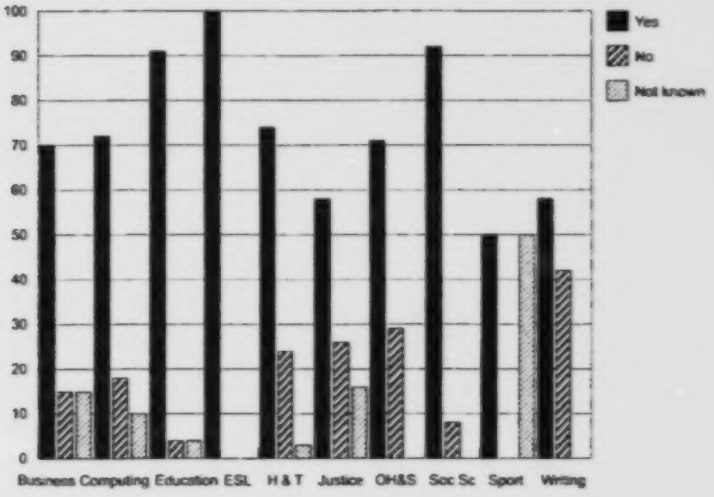


Table 6: Positive and negative factors by course*

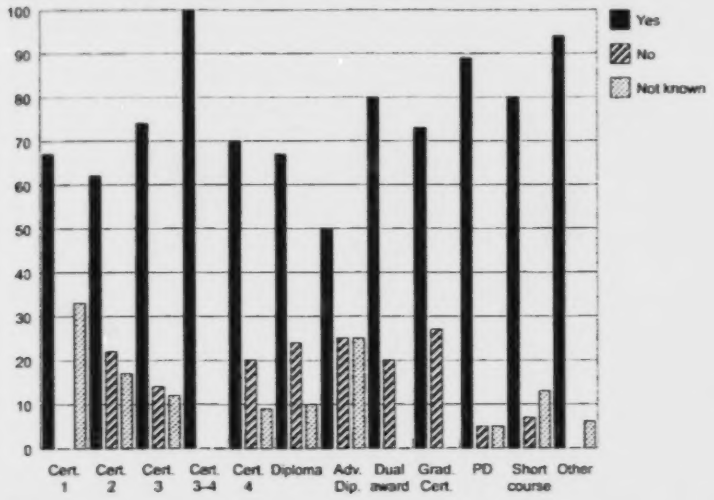
Course	'Made it good'	'Made it bad'
Business	Flexibility, time, place, convenience accessibility	Access and technology
	Teacher—in person or email	Teachers
		Assessment
Computing	Flexibility	Access—web sites, logins
	Course content	Assessment—problems with keyboard entry of tests, errors in questions and answers, no immediate feedback
	Teacher interaction	
	Access to information	Self—lack of time, discipline needed
	Gaining computer skills	Time taken for teachers to reply
	Design of materials, pages	Resources—unclear, dated and errors in the resources
Education	Interaction with teachers	Access—connection problems, slow download
	Interaction between students	Technology
	Flexibility	Self—lack of time, motivation, keeping on track
	Course content	
Hospitality and tourism	Flexibility	Access and technical issues
	Course content	Wasted time particularly due to not being able to get things off the web
		Confusing to use
OH&S	Flexibility	Self—no motivation, not the appropriate learning style
Social sciences including Justice	Flexibility	Assessment—trying to submit work online
	Teacher interaction	Access and technical failures
	Self—self-motivation, forcing out of comfort zone, willingness to learn	
	Course content and detail	
Writing	Teacher interaction	Access issues
	Student interaction	Chat room dropping out
	Chat	Isolated
	Computer skills	
	Flexibility	

Note:
*Student responses in priority order

Students' perceptions of quality by AQF level

The students studying the combined certificate 3–4 were the most positive about their online learning, all of them reporting it as a quality experience. The students who did not specify their course level were also very positive (94%), followed by those undertaking short courses (89%).

Figure 18: Student perceptions of quality—AQF level, by percentage



Note:
PD – professional development

Table 7: Positive and negative factors by AQF level*

Level	'Made it good'	'Made it bad'
Cert. 1	Flexibility	Nothing
Cert.2	Flexibility	Lack of support
	Access to information	Need for teacher interaction and responses
	Interactions with teachers	Problems with online assessment
	Clarity—ease of use	Access—connection problems, dead links, downloading information
Cert.3	Flexibility	Self-motivation, learning style, boredom
	Computer skills	Lack of teacher
	Access to information	Access—connection problems, slow
Cert. 3–4	Gaining computer skills	Technical problems
Cert. 4	Flexibility	Access
	Interaction with teachers	Assessment
	Course content	Lack of teachers
		Self
Diploma	Flexibility	Access issues
	Interaction with teachers	Self-motivation, time
	Course content	Assessment
	Chat	Need for help preferably 24x7
		Teacher
		Unclear instructions
		Resources
Advanced diploma	Flexibility	Lack of student support
Dual award	Flexibility	
Grad. cert.	Teacher interaction	Technical problems
	Flexibility	
Professional Development	Interaction with teachers	Access and technology
	Interaction with students	
	Flexibility	
Short courses	Teacher interaction	Self-discipline
	Flexibility	

Note:
*Student responses in priority order

It's not all good—so what are the problems?

While the majority of students thought they had a quality online learning experience, 66% of the students cited at least one example of dissatisfying aspects, and many included a range of negative factors.

Table 8: Negative factors relating to online learning experience

Problem area	Student comments	
	Number	Percentage
Access and technology	82	25
Self	31	9
Assessment	30	9
Lack of teacher responses	25	8
Confusion	15	5
Resources	15	5
Lack of support	14	4
Need for help desk	12	4

Technology and access

Technology and access were the areas identified as posing the largest number of problems. Moreover, these two combined constituted a larger negative than flexibility was a positive. The difficulties students encountered included problems in connecting to the network, missing or dead links, downloading and limited access.

Downloading information and assessments caused numerous problems because of lack of speed and because of process failure. In some cases, the system was too slow and it was unreliable. Work failed to download. Submitting assessments was problematic and work would just disappear. Students did not always know whether their work had been successfully submitted or not.

> Many problems with computers. Things don't always work out how you want.
>
> The unreliability of the platform—*often* very slow (almost to a crawl) and regularly inaccessible.
>
> Those times of feeling helpless when faced with technical problems, e.g. incompatible software.
>
> The anxiety associated with being disconnected.

Self

Many students had problems that related to their own motivation, organisation, lack of time or difficulties with the style of learning and discipline required for self-directed learning.

> Lack of time.
>
> Lack of face-to-face [contact].
>
> Getting fired up.

Another difficulty lay in the nature of the online environment and the style of nonlinear learning required, for example:

> Still get lost going around in circles looking for what to do next, or how to get to the next step. As an older person, I find the non-linear nature of this system of learning difficult to grasp *at first*, although I intend to get the hang of it.

These comments are important in the light of the enthusiasm for self-directed learning currently being expressed in the literature and public documents.

Assessment

Assessment online caused difficulties and anxieties for some students. The process of downloading assignments and submitting work was one part of the problem. The other more pressing issue was the lack of prompt feedback. Students with problems in this area reported that they did not know whether what they were doing was correct or not. Furthermore, they often had to wait a long time to get any feedback on their work. Their frustration is evident in their comments.

> No feedback whatsoever on submitted work.
>
> I don't know if my assignments or activities are on the right track.
>
> Thinking that I had submitted [the] assignment on time then finding I hadn't keyed the correct procedure.
>
> Response time is unbelievably slack. I waited nearly two months for my first worksheet results and even than was only told 'it looks OK to me'. Not good enough.

Students needed more information around the subject of assessment. They wanted to know what was required, when it had to be submitted and how to submit it as the following comment indicates:

> ... almost no info on assignments and other needed work.

Teacher support and interaction

One of the problems was the lack of a teacher on hand when students had problems. Some wanted a teacher on the spot; others wanted to be able to phone the teacher as they found email too slow. This is a problem that needs further consideration. Teachers have commented that interaction seems to work better when the students have a clear understanding of when the teacher will be accessible. It is unreasonable and unrealistic to expect teachers to be always on hand. A 24-hour help desk may solve some of the problems, although it is unlikely to solve the program-specific issues, which require familiarity with the course content. The following comment offers an example of this:

> Lack of one on one with the lecturer. Being able to ask what would be a simple question, and get the answer there and then so you can continue on. As it is it may take till the next day to ring/email etc.

While this is obviously an issue for the student, one has to wonder whether instant response is a realistic goal for staff and for the organisation. Before promoting 'just in time, just for me' options, organisations may need to consider how far they are able to go down this path.

Some students expressed their desire for blended delivery where they would see the teacher as well as work online.

> No face-to-face workshops to complement the online material.

Confusion and the need for induction

The students' comments clearly point to the need for induction into online learning. This is not just at the start of the online experience, but is required whenever a significant change is introduced. Students suffered difficulties and confusion whenever the platform or internet server was changed, resulting in changes to their standard procedures.

> ... [confused by] learning my way around the site.
>
> Not everything was fully explained in the printouts and there was a delay in receiving replies via email from the online teacher.
>
> Problems as a first time internet user navigating the site. Seem to spend a lot of time searching for the right place, and emailed instructions unclear.

Resources

Some resources were found to be confusing. Some were out of date, with errors, spelling mistakes and some resources were missing. Online materials need to be clear, well-designed and have accurate information.

> ... unclear study guide ... missing resources online, unclear answers to queries.
>
> ... the way the online lessons are set out ... the index is not clearly visible to select from.
>
> Very badly constructed in some areas.

Lack of support services

While student support is further down the list, there are some essential elements required for the provision of quality online learning. Students need access to information and need to be able to get a level of support from administrative staff similar to the level that would be available on campus. There was one case where a student was delighted with online enrolment, but more often than not administrative support is entirely hidden from online students.

> Delay in getting online enrolment.

The support not only needs to be there, but also needs to be clearly visible and accessible to online students. Those who provide the support need to understand the online student's needs.

> IT and administrative personnel at my facility have not been adequately briefed on online protocols and this caused a significant delay in me commencing the subject.
>
> Many problems already from the beginning. Information to start online enrolment from TAFE: 3 weeks. TAFE administration not aware of total online system. Online enrolment was absorbing in total: 5 weeks. The 'No URL-messages': waste of time: 2 weeks.

Need for a help desk

Students want help to be accessible just when they need it. It is not just the online resources that should be 'just in time' and 'just for me'; access to help should be available when the student needs it and in a form that he or she can use. For example, email or web help services are of no use to a student who cannot log on to the system.

> If there is a problem, it cannot be solved immediately.
>
> If you need any help, don't understand or can't find the work there is no teacher or any other staff to help you.
>
> How to get started since this was the first time using this type of learning. When I had a problem it was hard to find the answer to my question.

What should we do to make it better? Students' suggestions for improvements

The students made many useful suggestions for improving the online learning experience. One hundred and eighty-one students (54%) suggested improvements. Most were specific ideas, which could easily be implemented.

Two ideas in particular were suggested which might be a useful starting point for program/policy development in online learning:

> The organisation must have a clear purpose/rationale for online implementation.
>
> Use the online environment when it will make a difference.

Table 9: Suggestions for improvement

Suggestions	Number of student comments
Technology	27
Teacher support	25
Instructions and induction	25
Materials	18
Hybrid delivery	14
Assessment and feedback	13
Chat	11
Print support materials	6
Need for help desk	5
Administrative and technical support	4

Technology

Technology needs to be fast and reliable. Students suggested having two servers rather than just relying on one.

> Use of a reliable server for the course.
>
> A much more robust and accessible site.

Online learning usually involved linking to different materials. These links must be maintained. It is very difficult to ensure that other people's sites are online, but explanations to students describing the nature of the web and the problems that occur would help them understand the difficulties they can encounter.

Teacher support

Good teacher support was really appreciated by students. If the teacher kept in contact with them and was available to answer queries, then all was well. As one student said:

> 'The secret is in the teacher!!

Many students wanted more teacher support than they were receiving online. For some, a hybrid model of face-to-face contact with a teacher to complement the online environment was the answer; for others, more interactions from their online teacher, tutor or facilitator would solve the problem.

> For the head lecturer or tutor to stay in contact with students and see how they are going.
>
> Teachers to keep in contact with their students. Don't just dump the modules up there and effectively say 'Here's the stuff you need. Call me if you have a problem.'
>
> Teachers need to generate a feeling amongst the students of being part of a group.
>
> More interaction with the people who are the teachers of the course. Availability is very limited.

Instructions and induction

Clear accurate instructions are needed on the use of the internet, managing the online environment and online learning as well as specific instructions for the subject, including the assessment requirements. As noted earlier, it is also important to update instructions every time there are major changes to the platform or website, especially if they involve different login or access procedures for students. Students become familiar with a specific way of operating and need information on how to manage new environments.

Better instructions in manual and online.

... help getting on to the website and around it. Students given an introduction to using the computer and internet. This sounds a bit stupid, but some people don't know how to or have regular access.

Notify me by email when changes to web address or other login procedures are made.

Materials

It is important to have accurate materials online. Students picked up errors, including spelling mistakes, and were irritated by incorrect answers to quizzes.

Get the spelling right in all modules.

However, there were quite a few requests for more units to be available online and students had some suggestions for online presentation and materials.

You could have online video tutorials, much like a lecture.

A frequently asked questions area so small problems can be solved quicker, without having to wait for a teacher to email you back.

Some tips for designers were suggested:

It would be good if the background colour of some pages was lighter as they are sometimes illegible when printed.

Ensure submit buttons and posts work.

Better navigation method—remove some layers of the navigation menus—causes confusion.

Being able to find where you have been and where you are going [to be made] easier—don't know how?

Hybrid delivery

The mix of face-to-face tuition with online learning is the solution to some of the students' problems. While this will not necessarily suit all those for whom the flexibility of time and place are of paramount importance, it will provide more teacher–student interaction and provide a forum for solving the difficulties students are encountering

Face-to-face interaction would help.

Inclusion of at least one face-to-face [contact].

A personal workshop every six weeks—mid-term.

More support for students in remote areas through the provision of workshops at regular intervals—feedback and encouragement for work submitted.

A few classes to explain—from the absolute basics!

Assessment and feedback

The biggest problem with assessment was the downloading of assignments and then submission of the completed assessment. Finding systems that are reliable and simple to use would be an enormous help to students.

... just the assessment drop boxes, could be a little easier to use.

Timely feedback on assignments is essential for student learning. There have obviously been numerous problems with providing adequate staffing levels for the online instruction. Online education is requiring new development and delivery skills which means that teacher workloads will have to be dealt with. However, if students are to be kept engaged with online learning, then some mechanism must to be found to ensure that teachers are able to provide prompt feedback to the students.

Faster response time with our results.

Faster, more informative feedback.

One student suggested:

... automating the marking of quizzes so they are instantly graded.

It is important to ensure that assessment is accurate and that all quizzes have correct answers.

Much more accurate questions, with corresponding answers which are in fact correct.

Providing samples of acceptable assignments would also be a help for students.

Improve the use of the chat room

The potential of chat rooms still has to be fully developed and utilised. Students have suggested regular chat times, as well as carefully monitoring the medium. Rules on the type of posting are useful so everyone involved knows what is expected.

Having meeting times in the web chat where the teacher will be online and if we have any queries we can ask them.

The discussion area should only be used to discuss course queries and not as a personal email chat room.

Print support materials

A few students would like printed materials to back up the online information. This could provide a reasonably priced alternative to downloading huge amounts of information. Most people still like to read from paper copies, rather than from the screen.

In all online courses, I feel a good accompanying textbook should be specified.

Even though the course is online I feel that there should be a hard copy distributed as I found that I was spending more time downloading and printing off information than actually [completing] the modules.

Help line

Help on call would solve many of the problems and bad experiences students had.

Online help where you could email if you got stuck would also be a great advantage as sometimes there is no way forward if you cannot solve the problem ...

A 24-hour helpline!! At least in the early stages of the course.

Administrative and technical support

The comments below provide ample comment on the needs in this area.

Well-briefed administrative and technical support is an asset to any educational area, and this is equally so for the online medium. Students should be provided with full details of who to contact for which problem and this could sort out a lot of difficulties.

Make sure support personnel know what is going on and provide comprehensive instructions to students.

A field officer with full computer knowledge to be available for those unfinancial, enough to pay for a computer expert to provide assistance.

... some means of contacting administration to sort out enrolment.

Students with disabilities

This research study did not focus on the students with special learning needs but the sample of student responses did include some from students with disabilities. While the access and equity issues for online education continue to be debated, these students were delighted with the access the medium provided for them.

Flexibility, and the possibility of studying at home are very important to these students as for the majority of students.

> It has given me the opportunity to study as I am disabled and housebound.
>
> It is very good for people that have been mentally and physically abused and have no advancement in their life. I myself found it also pleasurable to mix with so many good people and have found that they fully understand ...

The online medium also provides access to resources in a variety of formats. This is both a quality feature of the resources and an aspect of flexibility that helps different students learn in different ways. One student with dyslexia commented on how the pictorial nature of the medium had enabled her to learn. The pictures had provided an understanding where the words were meaningless.

A blind student was interviewed and for him online education had opened up a world of possibilities and had certainly provided quality learning. It had made a whole world of resources accessible to him. Voice software called JAWS translates the printed word into audio descriptions of the online pages. This enabled him to understand the course material and to communicate online with other students, with staff and with other participants in chat rooms and discussion boards. It was critical for him, that online resources were designed to be accessible to the software. Pictures need words behind them. Pages need word maps so the software can interpret what is there.

Cost

The cost of online education is often a contentious matter. One of the original aims for online education was to reduce costs. However, there are no indications that the cost of teaching is any less online than in front of a class. Preparation time has been identified as more onerous, and resource development is an expensive business.

Some of the costs have been passed on to students, although it is unknown how the average cost of printing notes from online resources compares with the amount students used to spend on books. From the students' perspectives, cost did not present as an issue. It was rarely mentioned in these surveys. Twice it was identified as one of the factors of quality, and in both these instances it was seen as a one of the factors that made online learning a quality experience.

Where does the online experience start?

This question is more complex for educators than for students. Discussions with educators have indicated that they differentiate far more than students do between the various components of the education process. For students, learning actually means the learning process, not the whole educational environment. The majority of educators considered the online learning experience to start at the first lesson, while the majority of students considered it started at enrolment.

Table 10 reports the responses from the questionnaire.

Table 10: Where the online experience starts

Start of online learning	Students		Educators	
	Number	Percentage	Number	Percentage
Online advertisement	14	4	3	5
At enrolment	123	37	7	12
First lesson	88	26	22	38
Email contact	24	7	5	9
On induction	10	3	8	14
RPL/RCC process	5	2	0	0
Start of academic year	17	5	0	0
Other unspecified	52	16	13	22

Note:
RPL/RCC – recogniton of prior learning/recognition of current competencies

Focus groups and case studies

Focus groups provided an important educators' perspective in the research, endorsing and enhancing the findings from the online survey. Five focus groups were conducted at different organisations: the Canberra Institute of TAFE; Swinburne University, TAFE Division in Melbourne; Southern Queensland Institute of TAFE, Toowoomba campus; TAFE SA and ACEWeb in Victoria. The last group consisted of teachers who were also online students, and were therefore able to speak from both points of view. Other groups also included some members who were, or had previously been, online students. In each case the participants were asked to discuss the subject of quality in online learning in general terms, and were then asked to list and rank their top five factors promoting quality. Additional interviews with teachers and other staff took place during case-study research at Southbank Institute of TAFE, Tropical North Queensland Institute of TAFE, and (by telephone) at the Normanton campus of Mt Isa Institute of TAFE.

The focus groups consisted of five to eight participants. Each focus group began with a discussion of each participant's experience of, and interest in, online learning. General discussion of the subject of quality in online learning then took place, and participants were then asked to nominate and rank their top five quality factors. The discussions were loosely structured to allow for the development of as broad as possible a range of participants' views. Without exception, the participants were generous in their willingness to share their experiences. The researchers were impressed by their openness about both positive and negative aspects of their work and their evident commitment to learning and to their students. They were also impressed by their willingness to try out new teaching methods and technologies. It is worth noting that the focus groups included a reasonable balance of genders, a variety of discipline areas and an age range probably covering (although participants were not asked to reveal their ages) ages 30 to 60.

Additional input was gained from workshops at a number of different conferences.[1] These gave the researcher the opportunity to share the data to date and to explore the meanings of this with other educators.

The case studies provide snapshots of current practice as seen by the staff of organisations which are at different stages of putting online learning systems into place. Some have been offering online delivery for some years; others are newer to it. Details of these studies can be found in appendix 3.

Two case studies provided a whole-state perspective while the others represented stand-alone technical and further education (TAFE) institutes, a multi-sector university and an adult and community education (ACE) provider. These cases have provided useful input and provided a basis for the analysis of the data from the educators.

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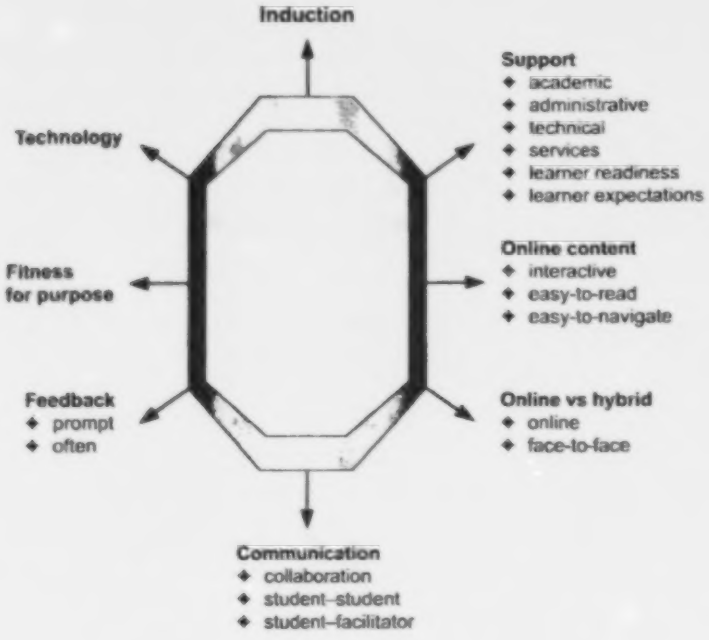
[1] For example, NCVER Research Conference, Coffs Harbour, July 2000; TAFE Frontiers Conference, Melbourne, October 2000; Queensland Learnscope Projects, Brisbane, December 2000; International Conference on Post Compulsory Education and Training, Gold Coast, December 2000; Queensland Open Learning Conference, Brisbane, December 2000; AVETRA Conference, Adelaide, March 2001; Net*Working 2001, Brisbane, September 2001

Quality described by educators and organisations

The quality factors suggested in these discussions can be shown graphically (see figure 19).

Figure 19: Quality factors identified from focus group discussions



This chapter describes these factors in detail, and also the discussion of teachers' experiences and the impact of online teaching on their work.

Note that no ranking of importance is implied by the order of the topics, as rankings varied considerably.

Induction

Discussion of induction ranged from a broad institution-wide perspective to a number of quite specific suggestions. There was a strong view that students cannot be thrown into online study without preparation. The institution needs to provide guidance on the nature of online study, what students can expect, and what will be expected of them. They need to know how and from whom they can obtain help when they need it, especially in relation to difficulties with technology.

It was suggested that induction should include an orientation to the course website and associated tools, together with the prevailing code of etiquette. One teacher suggested that induction materials should be constantly available, and the induction process revisited from time to time. This approach would provide a process which could be used as a way of dealing with inappropriate behaviour, in a similar way to a grievance policy.

Building the online community was seen as an important part of the early stages of online learning, and ice-breaker activities could be used for this purpose.

An important part of the preparation for study, either at the induction stage or (perhaps preferably) before enrolment, is the identification of the prerequisites skills which learners will need for success. These may be subject-related, but may also include computer skills in prescribed software applications or in the use of the internet.

There was a view that induction materials should be available in print or in a variety of modes rather than online only, especially for less experienced online learners.

Support

Technical support

When students get into difficulties with technology, the help provided needs to be immediately available, responsive, knowledgeable and friendly. The provision of online help only is inadequate, since a degree of technical proficiency is needed to make use of it. Print or, preferably, telephone help services were proposed as essential.

Learning support

Many of the participating teachers make initial contact with their students by email. Some continue to make regular email contact; others prefer to wait for the students to contact them thereafter, only initiating contact if the student, after a reasonable period, appears to be inactive.

One teacher suggested that students could be encouraged to support each other by means of a web forum, along the lines of a frequently asked questions page.

A number of participants suggested that a learning support agreement should be made between the student and the organisation, detailing what each can expect of the other, and perhaps including an outline of what services or support will and will not be provided.

Support at the beginning of the online learning experience was seen as particularly important. This is discussed under the heading of Induction.

Online content

A summary of the views expressed about online learning resources indicates that they should be fast to download, easy to read, easy to navigate, and utilise online features suitable for the purpose.

Since (in the case of those studying away from campus) the teacher is not present to prompt students to take the next action required, the materials should include clear step-by-step directions on what to do, how to do it, and where to go next. Where appropriate there should be instructions on when to submit work or move to a new activity.

The visual design and instructional design should present an attractive and professional appearance, and result in stimulating and interactive resources. While some participants suggested that many students enjoyed visual features such as Flash animations, there was general agreement that files should be kept to as small a size as possible. Many students work on older computers or have low bandwidth internet services and are therefore disadvantaged or annoyed by large files slow to download.

The language used should be clear and unambiguous, pitched at a level suitable for the target student group. A variety of learning activities and learning pathways should be included to suit the varied learning preferences of students. As in a classroom, online students need to be

engaged, stimulated and challenged—and their interest maintained—by the learning resources. One way of doing this is by using online features that support the type of learning required. For example, text on screen is one way of presenting information, while web discussion forums can encourage interaction between students and offer a way of building content co-operatively. A variety of media can be used; for example, download time can be saved if longer texts are sent to students on compact disc (CD), while print materials still have currency in many fields. Some participants, however, felt that it was important to include all necessary items online, even if supplementary media were used.

A valued aspect of online resources was the ability to link to external sites, and thus capitalise on the richness of material available in Australia and elsewhere. This may include links to 'real life' content as well as educational sites, thus making use of the potential for learner-driven, experiential learning.

Focus group participants considered that students appreciate the immediacy of feedback offered online: that inbuilt mechanisms provide awareness of what they have achieved, how well they have done, and where they are in relation to their goals. Virtual rewards (graphics such as lollies that appear when a task is completed) were suggested as an example of small-sized graphics that were appreciated by some learners.

Assessment instruments should be clear and fair. A number of participants have found that formative assessment works well online (using quizzes and similar devices), but summative assessment works less successfully.

An advantage of online resources is that they can quickly be updated or added to. Students therefore soon develop an expectation that information will be up to the minute, and become impatient if it is not. As in any medium, online materials must be accurate and reliable.

In the early days of online delivery, there was a tendency to simply place large quantities of text material on the web. Participants reported that students find this boring and unsatisfactory. Many people find it difficult to read large quantities of text on screen, but downloading and printing can be a considerable cost to the student.

Many online resources are not designed with the visually impaired in mind. It was suggested that a variety of presentation methods should be offered to overcome this problem. At the very least, 'alt text' should be provided for all graphics, so that screen reading software would be able to recognise it.

Overall, the view was that all aspects of learning resources should be designed with a purpose in mind, and should be sensitive to the learning aims and circumstances of the target audience of students. For many, online systems are exciting and fascinating, while some find them new and daunting; it is therefore important to remember to include an element of fun and enjoyment.

Online and hybrid delivery

Many focus group participants preferred hybrid delivery (that is, delivery which combined online and face-to-face elements) to purely online programs. One teacher proposed that:

> … the learner has to be taken into consideration in deciding whether the whole program should be online or hybrid. Some students can't take to using a computer, or are not motivated for online learning. Face-to-face [teaching] should always be offered as an option.

Another group suggested that real human contact was missing if the course was entirely online. A third group suggested that there was a tendency to over-stress the importance of what appears on the screen. 'Online is only part of the learning process', they said.

The usefulness of an initial face-to-face session for building group norms and acquiring basic computer skills has already been mentioned.

It was noted that some subject matter lends itself more easily to online learning. One participant mentioned an idea raised at the Net*Working 2000 conference: that online components could be used to enhance face-to-face learning, rather than the other way about. For example, web discussion and chat could be used to progress discussions that began in class.

Communication

A teacher who is also a student in a Teaching and learning online course summarised the role of the teacher as 'a facilitator, a communicator, a technical trouble-shooter, someone with above-average intuitive ability to create and keep a cohesive group'.

Other members of the same group found that, although their teacher was not so immediately accessible as he would have been in a class, he was able to divide his attention more evenly across the group, and so they summarised the online teacher–student relationship as being more democratic.

A number of the focus groups suggested that the relationship between the teacher and the individual students was important in keeping the student motivated and able to work through difficulties. In order to do this, the teacher must have a good understanding of the precise use of language needed when writing emails to compensate for the lack of visual cues and to avoid misinterpretation. This was identified as a skill differing from normal prose writing. The importance of this contact was underlined by the story told by a teacher who kept in email contact with a student while personal problems took her away from her study. This contact helped her to return to her program when the problems had been resolved. Other teachers reported that students telephoned them 'just to put a voice to the person'. As in the classroom, the online teacher is important in providing external discipline and motivation to continue for those students who are not self-sufficient. Opinions were divided about the degree to which teachers should take an active part in initiating contact with students, rather than simply responding to contact.

Students expect teachers to provide prompt and comprehensive responses to queries. The teacher must be able to develop rapport online, and must also have a good knowledge of the subject content. This was reported to be harder in self-paced programs. When working with a lock-step group, teachers suggested that they tended to keep in mind the current part of the content, but with a self-paced group they needed to keep the whole program at their fingertips. An understanding of the technology being used was also seen to be important, since difficulties with technology often arise, especially for learners new to online study.

The development of a relationship of trust and respect between teacher and learners is considered to be an important part of online study. Many participants felt that this was assisted by a face-to-face session at the beginning of the program; others felt that it was important for the teacher to foster this by stimulating discussion and by paying attention to the tone and language of online postings. One group suggested that a face-to-face session at the beginning of the program provided a good setting in which to learn the basic computer skills required. Many of the skills were thought to be easier to demonstrate face to face, and the load on the teacher was eased if technical problems were dealt with at one time rather than individually over a period. Where there are different skill levels in the groups, the opportunity exists for students to help each other. This has the side benefit of providing a foundation for co-operative and self-directed learning throughout the program.

Through the development of a personal style of writing and interacting, the teacher can allow his or her personality to be evident online as well as face to face: 'students can read the teacher's

enthusiasm', as one participant put it. The teacher can maintain the momentum of discussion by putting forward questions, posting appropriately provoking suggestions, and giving cues. Individual emails can be used to encourage reticent students to participate. Activities in different forms, such as web discussion, group and individual emails, chat sessions, appeal to different learners' preferences and can be used to monitor the development of learners' skills in these formats. They also offer a balance between immediacy (chat) for those who like instant interaction, and reflective space (web discussion, email) for those who prefer to take time to think before posting. The combination of group and individual interaction allows the development of a constructive learning community in which students take their share of leadership, and at the same time gives space for the teacher to work with individual students according to their needs. It also accommodates the differing preferences of learners who have the confidence to make postings that can be read by the whole group, and those who prefer privacy.

The potential for interactive, co-operative, student-led learning was seen as a strong advantage of online programs. Web discussion, group projects and other techniques can be used to enable students to build content, drawing on both their study and their own lives and experiences. The combination of immediacy and asynchronous activities is conducive to deeper reflection and learning.

Some participants pointed out that learners and teachers may get to know each other more quickly than they would face to face. Students, in their experience, are quick to reveal details about themselves, and expect staff to do the same, expecting a democratic and reciprocal relationship. Teachers need to decide what boundaries they wish to set so that they do not make themselves vulnerable, but students appreciate the sense of humanity they gain from a more personal relationship than that they might experience with a classroom teacher.

Two groups raised ethical issues of privacy and confidentiality. They gave examples from their learning experiences of teachers logging on under a pseudonym, under the guise of a student, to post provocative messages in order to stimulate discussion. It is also possible for teachers to examine logs of students' online activity, to discover, for example, how often a particular student visits the course website. Opinions differed about the legitimacy of such actions, but all participants agreed that teachers (or organisations) should formulate codes of ethical behaviour.

It will be apparent that skilful teaching requires close attention to be paid to online activity, both to foster the active learning processes and to monitor the discussion to ensure that appropriate behaviour is taking place. The teacher needs to be thoughtful and sensitive to students' needs, and to be meticulous about modelling good online behaviour.

A few focus group participants who had had unsatisfactory experiences as online learners noted the feeling of insecurity when the teacher appears not to have adequate control over the content and process. Examples were given of occasions when the teacher failed to respond to emails or discussion postings, or responded in a disrespectful or unsympathetic way, or had insufficient technical knowledge to manage the tools that are used. One participant had participated in an online session where the teacher allowed a few individuals to dominate the interaction and this was felt to be problematic.

Flexibility

Flexibility of time and place has emerged as the top 'quality factor' from the student surveys. The focus group participants mentioned both positive and negative aspects of flexibility.

They were aware that the flexibility to study at times of the learner's own choosing was one of the attractions of online study, as was the ability to study at home, at work, or on campus. Along with these was identified the opportunity to enrol at any time of the year, rather than waiting for the next semester.

This flexibility works well for students who are motivated, self-directed and well-organised, but is not so good for others. One focus group suggested that open entry and self-pacing could work against the interests of students; they preferred to keep the students working as a group as the interaction and peer support enhanced motivation and increased completion rates. This need not detract too much from flexibility; one organisation is considering introducing group enrolments at fortnightly intervals.

Some participants suggested that a regular online 'class' (such as a chat session) could be useful in providing structure and external discipline for those who need it. Where the learning is self-paced, students do not appear to be aware that their peers in a web discussion are at different stages of the subject. Management of such a group can, however, be difficult for the teacher.

The inflexibility of administrative processes at the institutional or state level can cause difficulties. In some states, reporting systems cannot accommodate flexible enrolments that continue across semesters; in at least one state, students in this position receive an automatically generated 'not yet competent' result, and the teachers concerned have to reassure the students that their final result will not be jeopardised.

Technology

Technology, for the purpose of this discussion, is defined as the hardware and software required by students, institutional networks and servers, and internet connections.

Discussion of the technology of online learning produced expressions of enthusiasm for the potential, as well as many stories of frustration about the problems experienced in practice. Although the conversation was always animated on this subject, the points made can be briefly summarised.

The online experience is enhanced when the technology is available, accessible, reliable, fast and easy to use. Technology that is hard to access, unreliable, slow and poorly maintained is detrimental to online learning.

There are many students who have an old-model computer at home or none at all. For the former group, their software may place limitations on the online features they can utilise. For the latter group, access to online study is available only at work, on campus or at a learning centre, and is therefore likely to be limited in time.

A good many TAFE organisations operate on networks which were not designed for the volume of student traffic created by online programs. In these cases, service can be slow, and downtimes frequent. Similarly, servers may have inadequate capacity. This may limit the availability of online teaching features such as web discussion forums. Systems maintenance often takes place at weekends, a preferred study time for many learners. Technical staff are often overloaded by the demands of looking after IT facilities on multiple campuses, and therefore cannot always provide suitable helpdesk services.

Some students, especially those remote from campuses, would prefer to complete their enrolment and payment online, but these facilities are often unavailable.

For some students, cost factors limit their access to technology: internet access can be expensive for those outside metropolitan areas, and in regional areas, telephone lines and bandwidth are often inadequate, causing difficulties in connecting to the internet and inordinately slow downloads.

Some institutional and commercial online platforms are unsuitable for the purpose, slow to load and counter-intuitive to navigate.

All these problems lead to dissatisfaction and frustration for students. Those new to online learning and inexperienced with computers may fear that the problems are their fault, and thus be deterred from trying online programs again.

Once the technological problems have been eliminated, students need sufficient skills to use their computers and the online services provided. The focus groups all agreed on the importance of these skills for successful and enjoyable online learning. It was also agreed that the teaching organisation should ensure that, if required, students are provided with relevant training to ensure they have the necessary skills to undertake online study. Some potential students are intimidated by the technology, and need a gentle, non-threatening introduction.

One focus group pointed out that print literacy as well as computer literacy is needed to read online materials, a point that is sometimes forgotten. Those with less well-developed print literacy can, in many cases, be assisted by inclusion of alternatives such as sound files or visuals, although this should be done in a way which minimises download times.

Along with the skills of reading online go the skills of online writing. The need for teachers to be sensitive to the tone of their writing has already been pointed out; this is a skill needed by students, too, if they are to avoid being misinterpreted or unintentionally offending others. The use of devices such as emoticons can be of assistance, but is not sufficient in itself.

Impact on teachers' work

Recognition and workloads

Most of the focus group participants were enthusiastic about online teaching, finding it challenging, enlivening, rewarding and enriching. Their concerns centred on the fact that the changes it demands of teachers' working patterns are not recognised in budgets, working conditions or state reporting requirements.

While many focus group participants considered that the preparation of online learning materials is no more time-consuming than the preparation of print materials (assuming that the teacher has sufficient skills), all agreed that teaching and moderating online demand more time than teaching an equivalent group in class, especially when the program is self-paced. Many participants considered that the senior managers in their organisations and in state/territory VET agencies have not recognised this. One teacher said that 'management don't recognise that I have students because they don't see them physically—they don't realise that online is teaching!'

Budgets, workloads and outcomes reporting are still framed in terms of student contact hours, which bear little relation to the way in which online teaching and learning take place. Many teachers do their online preparation and teaching as an unrecognised add-on to their allocated workloads. One teacher reported that her first year of online teaching was done as an entirely voluntary activity; it was only in the second year that any allowance was made in her workload.

Skills and professional development

The need for induction into online learning for students has already been discussed. Focus group participants pointed out that staff, too, need preparation for online teaching. One group suggested that 'those who make the easiest transition to online teaching are those with experience with flexible learning or distance education: the qualities needed for online are the same, it is only the medium that is different'. Several groups suggested that teachers need training in online facilitation, especially in the management of self-paced groups. Moderation of online discussion was an element of online teaching that was thought to need particular attention. By way of example, teachers need to understand available protocols for online interaction in web discussion

and chat to ensure that all those who wish to participate can do so. It was suggested that teachers who already have good management and teaching skills might find such tasks easier.

When teachers are using material prepared by others, they need to make themselves familiar not only with the subject content, but also with the activities and options that are available to students. One participant said: 'I virtually had to do the module myself before I could teach it'.

When teachers are preparing their own materials, they need an understanding of instructional design and of design for the medium that they have chosen. In many organisations, program design is a team activity, so that being able to work as part of a team is a necessary skill.

Some focus group participants were largely self-taught; others had found that professional development initiatives such as LearnScope had been of great value to them.

Summary

The quality factors emerging from the focus groups included:

- preparation for and induction into online study, especially in relation to the use of technology
- technical and learning support
- online learning materials (including assessment materials) that are clear, accurate, accessible and suitable for the needs of the learners
- a general preference for hybrid modes, with a note that the suitability of online delivery could vary with the subject matter as well as the needs of learners
- the importance of communication between students and teachers and between students and students, and especially suitability of the medium, skills of the teacher and the setting of behavioural norms for online interaction
- flexibility of time and place, balanced by the need of some learners for structure and external discipline
- the necessity for workable and accessible technology, and for the skills to make use of it.

The focus groups also highlighted the impact of online teaching on the work of teachers. A need was identified to recognise online duties within the scope of budgets and workload planning. Professional development is important to ensure that teachers have suitable skills to teach online.

It would be inappropriate to draw conclusions from the small number of case studies in this report. It is possible to suggest, however, that the TAFE and ACE organisations studied are attempting to develop a strategic and co-ordinated way of implementing online learning. The approaches vary considerably, but it is clear that the organisations concerned have a strong commitment at senior management level. In larger organisations, the adoption tends to be patchy and to depend, at least in part, on the engagement of middle-level managers and teaching staff.

Conclusion: Lessons from the research

Underlying this study has been the desire of the researchers to understand what teaching organisations need to make online programs work well for their students. In this final chapter we draw out the principal lessons that emerge from the research.

Flexibility

Flexibility is exceedingly important to students. A quarter of the students specified that one or more aspects of flexibility was important to them. The issue of flexibility in pace is especially interesting when considered along with the comments about learning style and learners' own discussion of this. Many of the learners who responded to the survey were aware of how they learned, how they preferred to learn and what was important to enable them to learn. This is a clear indicator of the importance of providing for learners' preference in online education.

Good teachers, good teaching

The importance of good teachers, facilitators and tutors is another very strong message to VET organisations. Online education is not about replacing teachers with online content. It is successful through the work of good teachers online. It is essential that there be clear standards and expectations regarding the level and nature of teacher interaction online. The question arises of how this matter should be managed, by teachers, students and organisations, since it is clear that teacher–student interaction requires a good deal of time and thought. A prominent aspect of this issue is the expectation of prompt responses from the teacher. Just what is 'prompt', and when and how often can a teacher be expected to be at the end of the line? Student expectations online are more critical than in face-to-face situations. In class, students will wait for their turn, or will try to catch a teacher after class; the teacher can take speedy corrective action if a student becomes discontented. Online, the students want responses at the moment when they need the help. They do not want to wait for the next week or even the next day.

This message is clear from the current research with students who have the competence and confidence to proceed with their studies. It would be prudent to assume, unless further research indicates the contrary, that beginning students and those with low levels of computer competence will require even more attention to be paid to thoughtful and timely teaching.

Technology

Technology is a critical factor to positive experiences. Access, speed and reliability are essential. This must be the baseline for online education. Teaching organisations must look to the adequacy of their IT facilities and the technical help they provide for students and teachers.

Clear instructions on how to use the technology and, in particular, how to download and submit assignments and other activities are critical to successful online study.

Induction and instructions

Students in the study were often confused by the technology and the course materials. Induction and clear instructions are essential. Organisations must build into their online provision a gentle but comprehensive introduction to the technology, to managing the medium, to the online course structure and to studying online. They must also be clear about what they expect of students and what students can expect of the organisation.

Assessment and feedback

Assessment and feedback are important for online learning. Students expected responses to their work 'within the week'. In classes students can get a running estimate of when they can expect work back. In the online environment, in the absence of these estimates, they expect a rapid turnaround. Online assessment caused numerous problems, and after the technology, access was the next most problematic area. Students had many problems loading and downloading assessment material. Clear instructions must be given to students to cope with this aspect of the environment, and the materials and processes must be always be available and in working order.

Overall

The online technologies provide a flexible, convenient and innovative medium for the delivery of quality online learning. This medium has the potential to keep Australian students in contact with the rest of the world and to facilitate access to a huge global source of information and educational resources. It enables students to improve their computing and internet skills.

It is not a cheap option. Quality online education needs fast, reliable technology and infrastructure. It needs competent, capable teachers who are recognised for the huge amounts of time involved with teaching online. It needs well-developed and well-designed course materials that are interesting, stimulating and ideally provide elements of interactivity.

Online education provides an enormously flexible medium to provide student-centred and appropriate learning structures and supports for many students. The importance of face-to-face education alongside the online medium is very important. As one student identified in relation to the factors making for a quality learning experience:

> A highly interactive course that has a good balance between online and face-to-face.
>
> A resourceful and responsive teacher, easily accessible online and offline.
>
> A clearly laid out program and assessment.

Strategies for practitioners

The benefits of hybrid or blended delivery should be explored by all organisations. Students clearly want flexibility, but most also want interaction with teachers and other students. The balance between face-to-face and online learning and the benefits of hybrid or blended delivery will become more apparent in the VET sector as the use of information communication technologies becomes further integrated into delivery. In this survey, nine students commented on this mix as being the critical factor that made for quality.

Many students commented on the importance of interaction with teachers, and combining this with the flexibility desired can often best be done through a hybrid model of delivery.

Induction to online learning is needed to familiarise the students with the online environment and also to help them to learn independently. Induction to the online medium is necessary not just at the start of the online experience, but whenever a significant change is made to the platform or the structure of the resources.

Suggestions for future research

The researchers consider that great benefit could be derived from the collection of longitudinal data, perhaps as a part of NCVER's regular compilation of statistics, to assess whether students' and educators' views change as they become more experienced in online learning, as organisations become more experienced in online delivery, and as online platforms develop in robustness and user-friendliness.

The researchers suggest that the research framework devised in this study could be applied to an investigation of the views of potential and discontinuing online learners to see whether similar or different quality factors would emerge from these groups.

The researchers suggest that future research projects would be made easier if the organisations from whom data are to be collected become participants in the project, so that they take on responsibility and commitment for organising the data collection.

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Appendix 1: Analysis of questionnaire

Introduction

One strategy for determining the quality of online learning from the learner's perspective has been to design a set of questions as part of a Likert scale. These questions were administered online and students were able to access the questionnaire when they logged into their online instruction. This analysis is of the pilot study that consisted of 60 responses, 5 from educators and 55 from students. The questionnaire for educators differed slightly from that administered to the students in the transposition of the question designed to elicit the educators' opinions of what students think. This technique was used to determine the correlation between students' opinions and educators' opinions of what matters to students. The question 'Given the choice, I would prefer to see the teacher face to face than study online' became 'Given the choice, I think students would prefer to see the teacher face to face than study online'.

Method

Six constructs (termed 'broad area' in tables) were identified as representing the various aspects of attitude to the online learning. These were:

- Group 1 Attitude to online education
- Group 2 Attitude to online communication
- Group 3 Attitude to online materials
- Group 4 Attitude to online support
- Group 5 Attitude to online assessment
- Group 6 Attitude to the online technology.

Eight items were designed for each construct.

Table 11: Group/scale items

Group/scale	Items
1	1 – 8
2	9 – 16
3	17 – 24
4	25 – 32
5	33 – 40
6	41 – 48

Instrument

Students' questionnaire

1 I think online learning is better than face-to-face classes.

2 Given the choice, I would prefer to see my teacher face to face than study online.

3 I like the freedom of learning online.

4 I am only studying online because I can't get to classes.

5 I prefer online instruction to face-to-face classes.

6 Learning online is more convenient for me than attending classes.

7 I need to be more organised to study online than in face-to-face classes

8 I miss the discipline of having a class that I have to attend.

9 Online chat helped me feel connected to other students in the course.

10 I was able to express my opinions online.

11 Email communication with my tutor/teacher is fast and efficient.

12 I found online chat really worthwhile.

13 I really enjoyed the online chat.

14 I interact more with other students online than I ever did in class.

15 I like studying online because I can ask dumb questions without feeling a fool.

16 I like studying online because I have time to think about my answers to questions.

17 Having content that is interactive is very important to me.

18 I can access more learning resources online than I did when studying in class.

19 The learning materials in my course were easy to follow.

20 Online learning materials are really frustrating.

21 The online learning materials are more up to date than usual class materials.

22 I like sequential study not flipping all over the place.

23 The online materials are easy to understand.

24 I spend more time studying online materials than I did in face-to-face class.

25 I had no idea what learning online would be like before I started.

26 If I am having trouble with my study online; I can quickly get help.

27 The online induction is a great way to start studying online.

28 With online study student support is always available when I need it.

29 I was given support in learning to use library services online.

30 When I need help I want a real person not a computer help screen.

31 I need a lot of support with online learning.

32 You can always find someone to help you online.

33 I found doing tests online gave me useful feedback on how I was doing in the subject.

34 I don't think online assessment is valid as there is no way of checking who actually does the work.

35 Being able to do tests online is very important for me.

36 I didn't get feedback from my assessment in time for it to help my learning.

37 It's easy to cheat online.

38 I am sick of doing all the online tests.

39 I don't like a computer checking on what work I have done.

40 I like getting accurate records of how I am doing in the course.

41 I found getting into the system really difficult and this put me off learning online.

42 I got fed up with the course because the web pages took ages to download.

43 The technology required for online learning confuses me.

44 It was really great to be able to have many pages open at the same time and this helped me learn the subject.

45 I found it easy to get all the required plugins.

46 Online links always fail.

47 I had to learn a lot of computer skills in order to study online.

48 My teacher made sure I had the computer skills I needed to be able to study online.

Educators' questionnaire

1 I think online learning is better than face-to-face classes.

2 Given the choice, I think students would prefer to see the teacher face to face than study online.

3 I expect students to like the freedom of learning online.

4 I think students would only study online because they can't get to classes.

5 I think students prefer online instruction to face-to-face classes.

6 Learning online is more convenient for students than attending classes.

7 Students need to be more organised to study online than in face-to-face classes.

8 I think students would miss the discipline of having a class to attend.

9 I think online chat would help students feel connected to other students in the course.

10 I think students are able to express my opinions online.

11 Email communication with tutors/teachers is fast and efficient.

12 I think students would find online chat really worthwhile.

16 I think students like studying online because they have time to think about their answers to questions.

17 Having content that is interactive is very important to students.

18 I think students can access more learning resources online than when studying in class.

19 I think students find these learning materials easy to follow.

20 I think students find online learning materials really frustrating.

21 The online learning materials are more up to date than usual class materials.

22 I think students like sequential study not flipping all over the place.

23 The online materials are easy to understand.

24 I think students spend more time studying online materials than they do in face-to-face class.

25 Students have no idea what learning online would be like before they start.

26 If students are having trouble with my study online, they can quickly get help.

27 The online induction is a great way for students to start studying online.

28 With online study student support is always available when students need it.

29 Students are given support in learning to use library services online.

30 When students need help, they want a real person not a computer help screen.

31 I think students need a lot of support with online learning.

32 I think students can always find someone to help when online.

33 I think students found doing tests online gave them useful feedback on how they were doing in the subject.

34 I don't think online assessment is valid as there is no way of checking who actually does the work.

35 Being able to do tests online is very important for students.

36 I don't think students get feedback from their assessment in time for it to help their learning.

37 It's easy to cheat online.

38 I think students are sick of doing all the online tests.

39 I don't think students like a computer checking on what work they have done.

40 I think students like getting accurate records of how they are doing in the course.

41 I think students found getting into the system really difficult and this puts then off learning online.

42 I think students got fed up with the course because the web pages took ages to download.

43 The technology required for online learning confuses students.

44 I think students found it was really great to be able to have many pages open at the same time which helped them learn the subject.

45 I think students found it easy to get all the required plugins.

46 Online links always fail.

47 I think students had to learn a lot of computer skills in order to study online.

48 I made sure students had the computer skills needed to be able to study online.

Each question had five possible responses:

- ✧ strongly agree
- ✧ agree
- ✧ disagree
- ✧ strongly disagree
- ✧ no opinion.

'No opinion' was put last on the list of answers, as a counter to 'mid-point syndrome', where the easy or unthinking answer is the mid-point. When the items were scored, the value of this response was 3, the mid-point of the scale.

Data collection

The data were collected online and automatically fed into a database. The total number of responses was 60 with 55 from students and 5 from educators. One group of students missed questions 18–39 due to a downloading problem. This has now been rectified and should not affect the main study.

Each respondent only responded once so no retest data was obtained and test–retest reliability could not be calculated.

Data entry

The raw data collected into the database were transferred into SPSS with the following scoring system.

Table 12: Data scoring system

		Database score	SPSS value
*SA	Strongly agree	5	5
*A	Agree	4	4
*D	Disagree	3	2
*SD	Strongly disagree	2	1
*NO	No opinion	1	3

Note:
*These abbreviations have been used in tables and graphs which follow.

The scoring system for negative items was transformed so that the logic for the whole instrument was consistent.

Table 13: Scoring system for negative items

	Item score
SA	1
A	2
D	4
SD	5
NO	3

Items deemed to be negative were items 2, 4, 7, 8, 20, 22, 30, 34, 36, 37, 38, 39, 41, 42, 43, 46 and item 47.

Analysis

The computer program SPSS performed a set of analyses on the data. Information was printed out giving:

- frequency data for the item score for each item

- ✧ frequency distribution of scale scores, including maximum, minimum, mean, standard deviation and variance
- ✧ reliability analysis for each scale, including scale mean, scale variance, corrected item–total correlation and alpha
- ✧ interscale and item–scale correlations
- ✧ factor scree plot
- ✧ eigen values
- ✧ principal components
- ✧ varimax rotation.

Analysis of test items

All items follow the basic principles of item design. They use straightforward language and most have less than 20 words per item. There is variety in the questions, with both positive and negative statements and with some items engaging a personal involvement by using 'I think' as the start of the question, while others make a statement with which participants can either agree or disagree.

Item 44 on the students' questionnaire had 24 words and on the educators' questionnaire had 26 words. Ideally this question should be simplified.

Item popularity

Item popularity describes the percentage of the population which give a favourable response to the item. Item 3: *I like the freedom of working online* has the greatest number of *Strongly agree* responses, with 20, which is one-third of the population. This gives a popularity of 33%. Popularity can also be measured by the item mean, which in this case is 3.77 and is the highest mean of all the items.

Table 14: Items with lower means

Item		Mean	
2	Given the choice, I would prefer to see my teacher face to face than study online.	2.08	N
18	I can access more learning resources online than I did when studying in class.	2.17	
21	The online learning materials are more up to date than usual class materials.	1.87	
22	I like sequential study not flipping all over the place.	1.43	N
24	I spend more time studying online materials than I did in face-to-face class.	1.95	
26	If I am having trouble with my study online I can quickly get help.	2.17	
28	With online study, student support is always available when I need it.	1.93	
29	I was given support in learning to use library services online.	1.73	
30	When I need help, I want a real person not a computer help screen.	1.57	N
32	You can always find someone to help you online.	1.95	
34	I don't think online assessment is valid as there is no way of checking who actually does the work.	2.00	N
36	I didn't get feedback from my assessment in time for it to help my learning.	2.03	N
37	It's easy to cheat online.	1.82	N

Note:
N indicates a negative question.

Means were calculated for all items ignoring zero responses.

Item 4 has the most incidences of *Strongly disagree* with 10 cases being 16.5% of the sample. Item 4 *I am only studying online because I can't get to classes* has a mean value of 2.18. This is not the lowest mean.

The item with the lowest mean is item 22 *I like sequential study not flipping all over the place.* This is one of the items transposed as a negative so the 'agrees' response affirms sequential study.

Item discrimination

Items discriminate well if they distinguish between the people who score high on the total instrument compared with those who score low on the total instrument. The item–rest of test or item–total correlation gives an indication of this and identifies how well an item fits in with the rest of the scale. These data have been analysed to give item-rest-of-scale correlation.

Item–rest of scale correlation

There is a range of opinions regarding the acceptable values for item–rest of scale correlation. The opinion of Stringley is that the minimum acceptable value for item–rest of scale correlation is 0.30.

Only item 17 within scale 3 does not meet this criterion with an item–rest of scale correlation of .2292. If this item is deleted the alpha for the scale increases from .9218 to .9448, indicating that the scale would be improved with the deletion of this item.

On reflection and rereading of the item 17 *Having content that is interactive is very important to me*, it is possible that the omission of online as in *'online content'* could lead to answers that do not reflect the students' attitude to online learning.

Given the high correlation of all items with the rest of scale, an item–total scale correlation was carried out. All items have a correlation with the rest of the entire scale of greater than 0.30. Item 1 has the lowest correlation with the rest of the scale of 0.3160. However, if the item is deleted, alpha is only increased marginally from 0.9727 to 0.9730. Alpha values are exceedingly high, confirming the great degree of correlation within the entire instrument.

Item sensitivity

Items are sensitive when they elicit the full spectrum of responses from 'Strongly agree' to 'Strongly disagree'. This is measured by the item's standard deviation. The lowest item standard deviation is 1.19 for item 14, giving this item as the least sensitive item and the highest standard deviation is 1.67 for item 25 making this the most sensitive item. However, there is very little difference in the spread of values as demonstrated by the small variation in the standard deviations.

Item ambiguity

Items are ambiguous when the respondents do not know what is meant by the question. The best indicator of this is the number of 'No opinion' responses. In this pilot sample, there have been quite a lot of 'No opinion' responses. Feedback has been received that the terminology for this category would be better expressed as 'Uncertain' and this term will be used in the main study.

The following items had more than 25% of the sample respond with 'No opinion'. The wording of these items has been reviewed and the items have been reconsidered to see if their inclusion adds anything to the survey.

Table 15: Items where wording was reviewed

Item		Review
9	Online chat helped me feel connected to other students in the course.	Leave as is
10	I was able to express my opinions online.	Leave as is
13	I really enjoyed the online chat.	Leave as is
14	I interact more with other students online than I ever did in class.	Leave as is
15	I like studying online because I can ask dumb questions without feeling a fool.	Leave as is
27	The online induction is a great way to start studying online.	Change
28	With online study, student support is always available when I need it.	Delete *student*
29	I was given support in learning to use library services online.	Change *support* to *help*
45	I found it easy to get all the required plugins.	Leave as is

Scale analysis

Scale sensitivity

The sensitivity of the scale is given by the fraction of the entire range covered by that scale. The sensitivity for all these scales is reasonable, with scale 6 having a high sensitivity of 0.8.

Scale spread

Scale spread also gives an indication of the sensitivity of the scale. The higher the standard deviation σ, the greater the spread. In this case, scale 4 has the greatest spread, with a standard deviation of 13.5 and scale 1 the least spread with a standard deviation of 7.8. The spread in all cases is high.

Table 16: Scale analysis

Scale	Broad area	Mean			No. of items in scale
		ξ	σ	α	
1	Online education	21.4	7.8	.85	8
2	Online communication	23.0	8.3	.91	8
3	Online materials	17.4	11.0	.92	8
4	Online support	15.7	11.9	.96	8
5	Online assessment	17.4	13.5	.98	8
6	Online technology	24.5	9.5	.93	8

Note:
ξ –mean value for all responses to the questions in this scale
σ – the standard deviation which gives a measure of the spread of the values in the scale
α – Chronbach's alpha gives a measure of the correlation between items in the scale. A value of 0 would show there was no correlation between items. 1 would be complete correlation. The higher the value of α the greater the degree of correlation

Table 17: Scale sensitivity

Scale	Broad area	Range			Sensitivity
		Potential	Actual	Span	
1	Online education	8–40	15–34	19	.6
2	Online communication	8–40	8–40	32	1.0
3	Online materials	8–40	14–31	17	.5
4	Online support	8–40	18–31	13	.4
5	Online assessment	8–40	17–37	20	.6
6	Online technology	8–40	11–38	26	.8

Reliability

Internal consistency

Cronbach's alpha provides a general measure of the internal consistency of the scale. Scale 5 has the highest degree of internal consistency with a value for alpha of .98. It is recommended in the literature that Cronbach's alpha should be >= .8. On this basis, all of the other scales are acceptably consistent with very high values of alpha.

Test–retest reliability

The instrument was only used once so no data were available to check the test–retest reliability.

Factor analysis

Principal component analysis

Principal component analysis provides validation that the whole instrument measures attitude to online education. In this case the principal component analysis extracted 7 factors with eigenvalues greater than one, confirming that the instrument is a multi-dimensional instrument. The eigenvalues for these seven factors are 21.5, 9.4, 2.4, 1.5, 1.4, 1.3, and 1.04 which accounts for 80% of the variance. Factors with eigenvalues greater than 1 are considered significant, alhough in this case the seventh factor is barely greater than 1. Eighty-four per cent of the variance lies with factor 1.

From the varimax rotation, the items with the highest loading on the factor are the pivotal items and best describes the essence of the factor.

While item 33 is the item with the highest loading on factor 1, all scale 4 ('Attitude to online assessment') load above .75 and this factor could well be described as the 'Attitude to online assessment' factor.

Factor 2 embodies online chat. Factors 3, 4, 5, 6 and 7 all refer to the general questions regarding the flexibility of online education and do not provide any useful discrimination. The factors for the scale should be analysed again when there are further respondents.

Items with high cross loadings do not discriminate between the factors. In this instrument, there are no items that have a less than 0.2 difference with other factors, and all items have a significant weighting on at least one factor.

Table 18: Varimax rotation

Factor	Strongest item	Loading	Item
1	33	.87	I found doing tests online gave me useful feedback on how I was doing in the subject.
2	13	.70	I really enjoyed the online chat.
3	5	.59	I prefer online instruction to face-to-face classes.
4	7	.38	I need to be more organised to study online than in face-to-face classes.
5	2	.39	Given the choice, I would prefer to see my teacher face to face than study online.
6	1	.39	I think online learning is better than face-to-face classes.
7	4	.51	I am only studying online because I can't get to classes.

Construct validity

No correlation was carried out with another instrument measuring attitude to online education.

Attitude to online education

Three clear constructs were identified as representing the various aspects of attitude to online education, with a third general area that encompasses flexibility. These are: attitude to online assessment and attitude to online communication, attitude to flexibility of online education. It was surprising that there was not a factor aligning with attitude to online technology, although all items align strongly at .41–.65 with factor 2.

Improving the instrument

This instrument is being improved by removing the items which were not performing well. Other items have been reworded to better encapsulate the construct and the issues for exploration.

Additional open-ended items are being included to further explore the expectations and use of facilities and materials.

Eight Gap analysis questions are being added to explore the difference in expectations and actuality in the areas of flexibility, communication, learner support, assessment and access.

'No opinion' is to be changed to 'Uncertain'.

The revised online questionnaire can be found at www.online.tafe.swin.edu.au

Appendix 2: Results of the national survey—quantitative data

The online surveys sought information about specific aspects of online learning. Quantitative data were obtained through Likert-type scale questions and through a Gap analysis, while the open-ended questions about quality gave an opportunity for the respondents to impart their own opinions.

Likert-type questions

The Likert-type scale consisted of specific statements to which the respondents indicated they 'Strongly agreed', 'Agreed', 'Disagreed', and 'Strongly disagreed' or had 'No opinion'.

The Likert-type questions were designed around specific themes:

- ✧ online education
- ✧ online communication
- ✧ online materials
- ✧ online support
- ✧ online assessment
- ✧ online technology.

Both students and educators answered the same questions, so a comparison between the responses was possible.

The group of questions which addressed online education generally are directly related to the online learning environment, and probe learners' preferences between the online environment and the traditional face-to-face classroom environment.

Online communication explored communication through the electronic medium, by means such as chat or email. A number of aspects of this type of communication have been mentioned in the literature, specifically the time students have for reflective comment, and the freedom the medium can provide for students to make comments.

Students use online materials quite differently from the ways in which they use printed materials, and these questions explored the importance to students of the characteristics of online materials,such as the interactivity and the non-linear nature of the resources.

Questions relating to online support inquired into the need for support in areas such as induction, help and library services as well as the student's attitude to support. Support provided by other students was also included in this section.

Assessment online provides many challenges: the type of assessment that is appropriate; the interaction with the computer; the speed of receiving feedback as well as the validity and

reliability of assessment through the online medium. These questions were designed to shed some light on these issues.

The set of questions on technology explored issues around access to technology and software, ease of use, and speed of downloading information.

Students' responses

Responses are shown to all questions in table 19. The questions have been grouped to describe attitudes to specific aspects of online education.

The most positive responses: Students agreed with these statements

From this analysis the statements the students agreed with most were extracted. There were no responses with a mode or median of 5 'Strongly agree'. All those with a mode *and* a median of 4 ('Agree') have been identified, and they are ranked in descending order of the average value. These are:

- I like the freedom of learning online. (4.2)
- When I'm studying online it is very important to have interactive content. (3.9)
- Learning online is more convenient for me than attending classes. (3.8)
- Online induction is important before studying online. (3.8)
- I like sequential study not flipping all over the place. (3.8)
- I had satisfactory access to the internet. (3.8)
- I like studying online as it gives me time to think about my answers to questions. (3.6)
- The learning materials in my course were easy to follow. (3.6)
- The online learning materials are easy to understand. (3.6)
- I had no idea what learning online would be like before I started. (3.6)
- Given the choice, I would prefer to see my teacher face to face than study online. (3.5)
- I can access more learning resources online than I did when studying in class. (3.5)
- When I need help, I want a real person not a computer help screen. (3.5)
- It was really great to be able to have many pages open at the same time and this helped me learn the subject. (3.5)
- I had easy access to all the hardware and software I required. (3.5)
- Email communication with my tutor/teacher is fast and efficient. (3.4)
- I need to be more organised to study online than in face-to-face classes. (3.3)

Disagreement with the statements

Statements with a degree of disagreement equal to the degree of agreement reported above would need to have a mode and median of 2. There were no questions with a mode or a median of 1 ('Strongly disagree'). These are the questions with a mode and a median of 2 ('Disagree'). Questions are given in descending order of the average. Those nearest the top are most disagreed with.

- The technology required for online learning confuses me. (2.3)

Table 19: Summary of students' responses

Item	Questions and scale groupings	Students			Reaction to statements		
		Mo	Me	Av	Agreed	Strongly agreed	Negative*
	Online environment						
1	I think online learning is better than face-to-face classes.	2	2	2.7			
2	Given the choice, I would prefer to see my teacher face to face than study online.	4	4	3.5	✓		✓
3	I like the freedom of learning online.	4	4	4.2		✓	
4	I am only studying online because I can't get to classes.	2	2	2.8			✓
5	I prefer online instruction to face-to-face classes.	2	2	2.8			
6	Learning online is more convenient for me than attending classes.	4	4	3.8	✓		
7	I need to be more organised to study online than in face-to-face classes.	4	4	3.3	✓		✓
22	Online study is more time consuming than face-to-face study.	2	3	3.1			
8	I miss the discipline of having a class that I have to attend.	2	2	2.8			✓
	Online communication						
9	Online chat helped me feel connected to other students in the course.	3	3	3.3			
10	I was able to express my opinions online.	4	3	3.4			
11	Email communication with my tutor/teacher is fast and efficient.	4	4	3.4	✓		
12	I found online chat really worthwhile.	3	3	3.1			
13	I interact more with other students online than I ever did in class.	2	2	2.5			
14	I like studying online because I can ask dumb questions without feeling a fool.	4	3	2.9			
15	I like studying online because it gives me time to think about my answers to questions.	4	4	3.6	✓		
	Online materials						
16	When I'm studying online it is very important to have interactive content.	4	4	3.9	✓		
17	I can access more learning resources online than I did when studying in class.	4	4	3.5	✓		
18	The learning materials in my course were easy to follow.	4	4	3.6	✓		

Item	Questions and scale groupings	Students			Reaction to statements		
		Mo	Me	Av	Agreed	Strongly agreed	Negative*
19	The online learning materials are more up to date than usual class materials.	4	3	3.3			
21	The online materials are easy to understand.	4	4	3.6	✓		
	Online support						
23	I had no idea what learning online would be like before I started.	4	4	3.6	✓		
24	If I am having trouble with my study online, I can quickly get help.	4	3	3.1			
25	Online induction is important before studying online.	4	4	3.8	✓		
26	With online study, student support is always available when I need it.	4	3	3.0			
27	I was given help in learning to use library services online.	2	3	2.7			
28	When I need help, I want a real person not a computer help screen.	4	4	3.5	✓		
45	My teacher made sure I had the computer skills I needed to be able to study online.	2	3	2.9			
29	I need a lot of support with online learning.	2	2	2.7			
30	You can always find someone to help you online.	2	3	2.9			
	Online assessment						
31	I found doing tests online gave me useful feedback on how I was doing in the subject.	3	3	3.3			
32	I don't think online assessment is valid, as there is no way of checking who actually does the work.	2	3	2.9			✓
33	Being able to do tests online is very important for me.	4	3	3.3			
34	I didn't get feedback from my assessment in time for it to help my learning.	3	3	2.9			✓
35	It's easy to cheat online.	3	3	3.1			✓
36	I am sick of doing all the online tests.	3	3	2.6			✓
37	I don't like a computer checking on what work I have done.	2	2	2.6			✓
	Online technology						
38	I found getting into the system really difficult and this put me off learning online.	2	2	2.6			✓
39	I got fed up with the course because the web pages took ages to download.	2	2	2.6			✓
40	The technology required for online learning confuses me.	2	2	2.3			✓

Item	Questions and scale groupings	Students			Reaction to statements		
		Mo	Me	Av	Agreed	Strongly agreed	Negative*
41	It was really great to be able to have many pages open at the same time and this helped me learn the subject.	4	4	3.5		✓	
42	I found it easy to get all the required plugins.	3	3	3.3			
43	Online links always fail.	2	2	2.5			✓
46	I had easy access to all the hardware and software I required.	4	4	3.5		✓	
47	I had satisfactory access to the internet.	4	4	3.8		✓	
	Single items						
44	I had to learn a lot of computer skills in order to study online.	2	2	2.4			
20	I like sequential study not flipping all over the place.	4	4	3.8		✓	✓

Note:

Mo = Mode (most commonly occurring value); Me = Median (middle value); Av = Average or mean

Questions have been put in with their appropriate scale. The numbering indicates their position in the online questionnaire.

*Statements which were worded in the negative sense to the rest of that group. In these, a strongly agree indicated a negative response to the online attribute.

- ✧ I had to learn a lot of computer skills in order to study online. (2.4)
- ✧ Online links always fail. (2.5)
- ✧ I interact more with other students online than I ever did in class. (2.5)
- ✧ I found getting into the system really difficult and this put me off learning online. (2.6)
- ✧ I got fed up with the course because the web pages took ages to download. (2.6)
- ✧ I don't like a computer checking on what work I have done. (2.6)
- ✧ I need a lot of support with online learning. (2.7)
- ✧ I think online learning is better than face-to-face classes. (2.7)
- ✧ I am only studying online because I can't get to classes. (2.8)
- ✧ I prefer online instruction to face-to-face classes. (2.8)
- ✧ I miss the discipline of having a class that I have to attend. (2.8)

The responses to the technology questions were particularly surprising, given the number of negative comments there had been in the open-ended questions. Twenty-five per cent of the students made specific comments about problems that they had had with various aspects of the technology or access to the online medium. To try to understand why the students' responses to these questions should indicate a positive attitude to the technology, graphs were drawn of the responses against each question.

As can be seen from the graphs shown in figure 20, approximately 20–25% of the population has problems with the technology, while the rest are positive about it. While the aspects of technology that detract from the quality of the online experience seem to dominate the feedback given by students, in fact there were only 25% who complained. This corresponds to the numbers who have indicated they are not happy with the technology through the Likert questions. However the other 75% have been relatively positive, and their responses have made the difference to the overall score.

Educators' responses

Table 20 gives a summary of educators' responses. Questions have been put in with their appropriate group. The numbering indicates their position in the online questionnaire. Full analysis of the questions and the groups can be found in appendix 1.

Positive responses: Educators agreed with these statements

From this analysis the statements the educators agreed with most were extracted. There was one response with a mode and a median of 5 'Strongly agree'. This question was the most agreed with question.

- ✧ Online induction is important before studying online. (4.8)

There were three other responses with a mode or a median of 5. They are:

- ✧ I think students consider interactive content very important when studying online. (4.2)
- ✧ Students need to be more organised to study online than in face-to-face classes. (4.1)
- ✧ I think students need a lot of support with online learning. (3.9)

Figure 20: Responses to Likert scale questions

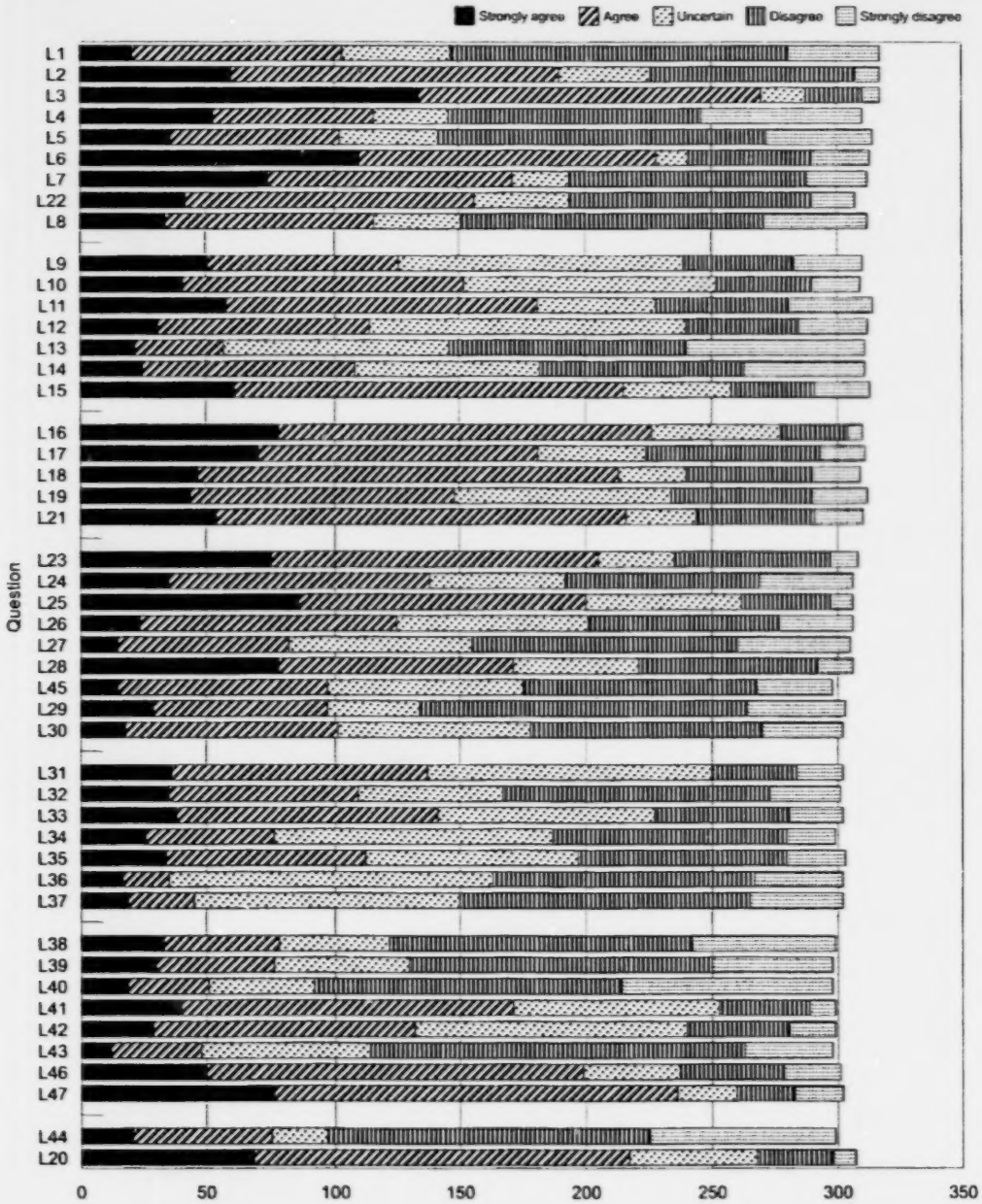

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Table 20: Summary of educators' responses

Item	Questions and scale groupings	Students			Statements		
		Mo	Me	Av	Agreed	Strongly agreed	Negative*
	Online environment						✓
1	I think online learning is better than face-to-face classes.	2	2	2.5			
2	Given the choice, I think students would prefer to see the teacher face to face than study online.	4	4	3.5	✓		
3	I expect students to like the freedom of learning online.	4	4	3.7	✓		
4	I think students would only study online because they can't get to classes.	2	2	2.5			✓
5	I think students prefer online instruction to face-to-face classes.	2	2	2.5			
6	Learning online is more convenient for students than attending classes.	4	4	3.7	✓		
7	Students need to be more organised to study online than in face-to-face classes.	5	4	4.1	✓		✓
22	Online study is more time consuming than face-to-face study.	2	3	3.0			
8	I think students would miss the discipline of having a class to attend.	4	4	3.3	✓		✓
	Online communication						
9	I think online chat would help students feel connected to other students in the course.	4	4	3.9	✓		
10	I think students are able to express their opinions online.	4	4	3.8	✓		
11	Email communication with tutors/teachers is fast and efficient.	4	4	3.8	✓		
12	I think students find online chat really worthwhile.	3	3	3.4			
13	I think students interact more with other students online than they ever did in class.	2	2	2.4			
14	I think students like studying online because they can ask dumb questions without feeling a fool.	2	2	2.7			
15	I think students like studying online because it gives them time to think about their answers to questions.	4	4	3.7	✓		
	Online materials						
16	I think students consider interactive content very important when studying online.	5	4	4.2	✓		

Item	Questions and scale groupings	Students			Statements		
		Mo	Me	Av	Agreed	Strongly agreed	Negative*
17	I think students can access more learning resources online than when studying in class.	4	4	3.7	✓		
18	I think students find these learning materials easy to follow.	4	3	3.2			
19	The online learning materials are more up to date than usual class materials.	4	3	3.2			
21	The online materials are easy to understand.	4	4	3.7	✓		
	Online support						
23	Students have no idea what learning online would be like before they start.	4	4	3.9	✓		
24	If students are having trouble with their study online; they can quickly get help.	4	3.5	3.3			
25	Online induction is important before studying online.	5	5	4.8		✓	
26	With online study; student support is always available when students need it.	2	2.5	2.8			
27	Students are given support in learning to use library services online.	3	3	2.8			
28	When students need help, they want a real person not a computer help screen.	4	3	3.3			
45	I made sure students had the computer skills needed to be able to study online.	4	4	3.6			
29	I think students need a lot of support with online learning.	5	4	3.9			
30	I think students can always find someone to help when online.	2	2	2.7			
	Online assessment						
31	I think students found doing tests online gave them useful feedback on how they were doing in the subject.	4	4	3.6			
32	I don't think online assessment is valid as there is no way of checking who actually does the work.	2	2	2.8			✓
33	Being able to do tests online is very important for students.	4	3	3.5			
34	I don't think students get feedback from their assessment in time for it to help their learning.	2	2	2.6			✓
35	It's easy to cheat online.	4	3	3.3			✓
36	I think students are sick of doing all the online tests.	2	2	2.5			✓

Item	Questions and scale groupings	Students			Statements		
		Mo	Me	Av	Agreed	Strongly agreed	Negative*
37	I don't think students like a computer checking on what work they have done.	2	2	2.3			✓
	Online technology						
38	I think students found getting into the system really difficult and this puts them off learning online.	2	2.5	3.0			✓
39	I think students got fed up with the course because the web pages took ages to download.	2	2	2.8			✓
40	The technology required for online learning confuses students.	2	2	2.7			✓
41	I think students found it was really great to be able to have many pages open at the same time which helped them learn the subject.	4	3	3.2			
42	I think students found it easy to get all the required plugins.	3	3	3.0			
43	Online links always fail.	2	2	1.9			✓
46	The students had easy access to all the hardware and software they require.	4	3	3.3			
47	Students had satisfactory access to the internet.	4	4	3.5		✓	
	Single Items						
44	I think students had to learn a lot of computer skills in order to study online.	4	2	3.1			
20	I think students like sequential study not flipping all over the place.	4	4	3.7		✓	✓

Notes:

Mo = Mode (most commonly occurring value); Me = Median (middle value); Av = Average or mean

*Statements which were worded in the negative sense to the rest of that group

Disagreement with the statements

Statements with a degree of disagreement equal to the degree of agreement reported above would need to have a mode and median of 1 ('Strongly disagree'). There were no questions with a mode or a median of 1 ('Strongly disagree'), although there was one with an average < 2. This was the most disagreed-with statement, which comes as a surprise given the negative statements participants have made about online links.

- Online links always fail. (1.9)

Congruence between students and educators

The areas of commonality and areas of discrepancy between students and educators are very interesting. There was not a great deal of disagreement. Table 24 gives a comparison between student and educator responses.

Most agreement

The area of most agreement, where there are no differences in the medians or the averages, is:

- Given the choice, I would prefer to see my teacher face to face. (3.5)

Followed by these statements where there is no difference in the medians and only 0.1 in the averages:

- I like sequential study not flipping all over the place. (Students 3.8, Educators 3.7)
- I interact more with other students online than I ever did in class. (Students 2.5, Educators 2.4)
- Online study is more time consuming than face-to-face study. (Students 3.1, Educators 3.0)
- I was given help in learning to use library services online. (Students 2.7, Educators 2.8)
- The online materials are easy to understand. (Students 3.6, Educators 3.7)
- I like studying online because it gives me time to think about my answers to questions. (Students 3.6, Educators 3.7)

Least agreement

The area of least agreement between students and educators is in the area of online support and the structure of the learning.

- *I need a lot of support with online learning.* (E = 5,4,3.9; S = 2,2,2.7; gap between medians = 2; and between averages = 1.2.) The educators agreed with the statement, believing students need a lot of support, and the students disagreed with it stating that they did not need a lot of support.

Other areas of significant disagreement:

- *I miss the discipline of having a class that I have to attend.* (E = 4,4,3.3; S = 2,2,2.8; gap between medians = 2; and between averages = 0.5.) In this case the educators agreed with the statement and the students disagreed with it.
- *Online induction is important before studying online.* (S = 4,4,3.8; E = 5,5,4.8; gap between medians = 1; and between averages = 1.0.) In this case the educators strongly agreed with the statement and the students agreed with it.
- *My teacher made sure I had the computer skills I needed to be able to study online* (E = 5,4,3.6; S = 2,3,2.9; gap between medians = 1; and between averages = 0.7.) In this case the educators strongly agreed with the statement and the students were neutral to disagreeing with it.

Table 21: Comparison between student and educator responses

Comparison	Questions and scale groupings	Students			Educators			Gap		
		Mo	Me	Av	Mo	Me	Av	Me	Av.	
1	I think online learning is better than face-to-face classes.	2	2	2.7	2	2	2.5	0.0	-0.2	
2	Given the choice, I would prefer to see my teacher face to face than study online.	4	4	3.5	4	4	3.5	0.0	0.0	N
3	I like the freedom of learning online.	4	4	4.2	4	4	3.7	0.0	-0.5	
4	I am only studying online because I can't get to classes.	2	2	2.8	2	2	2.5	0.0	-0.3	N
5	I prefer online instruction to face-to-face classes.	2	2	2.8	2	2	2.5	0.0	-0.3	
6	Learning online is more convenient for me than attending classes.	4	4	3.8	4	4	3.7	0.0	-0.1	
7	I need to be more organised to study online than in face-to-face classes.	4	4	3.3	5	4	4.1	0.0	0.8	N
22	Online study is more time consuming than face-to-face study.	2	3	3.1	2	3	3.0	0.0	-0.1	
8	I miss the discipline of having a class that I have to attend.	2	2	2.8	4	4	3.3	2.0	0.5	N
9	Online chat helped me feel connected to other students in the course.	3	3	3.3	4	4	3.9	1.0	0.6	
10	I was able to express my opinions online.	4	3	3.4	4	4	3.8	1.0	0.4	
11	Email communication with my tutor/teacher is fast and efficient.	4	4	3.4	4	4	3.8	0.0	0.4	
12	I found online chat really worthwhile.	3	3	3.1	3	3	3.4	0.0	0.3	
13	I interact more with other students online than I ever did in class.	2	2	2.5	2	2	2.4	0.0	-0.1	
14	I like studying online because I can ask dumb questions without feeling a fool.	4	3	2.9	2	2	2.7	-1.0	-0.2	
15	I like studying online because it gives me time to think about my answers to questions.	4	4	3.6	4	4	3.7	0.0	0.1	
16	When I'm studying online it is very important to have interactive content.	4	4	3.9	5	4	4.2	0.0	0.3	
17	I can access more learning resources online than I did when studying in class.	4	4	3.5	4	4	3.7	0.0	0.2	
18	The learning materials in my course were easy to follow.	4	4	3.6	4	3	3.2	-1.0	-0.4	
19	The online learning materials are more up to date than usual class materials.	4	3	3.3	4	3	3.2	0.0	-0.1	
21	The online materials are easy to understand.	4	4	3.6	4	4	3.7	0.0	0.1	
23	I had no idea what learning online would be like before I started.	4	4	3.6	4	4	3.9	0.0	0.3	
24	If I am having trouble with my study online, I can quickly get help.	4	3	3.1	4	3.5	3.3	0.5	0.2	
25	Online induction is important before studying online.	4	4	3.8	5	5	4.8	1.0	1.0	
26	With online study, student support is always available when I need it.	4	3	3.0	2	2.5	2.8	-0.5	-0.2	

Comparison	Questions and scale groupings	Students			Educators			Gap		
		Mo	Me	Av	Mo	Me	Av	Me	Av.	
27	I was given help in learning to use library services online.	2	3	2.7	3	3	2.8	0.0	0.1	
28	When I need help, I want a real person not a computer help screen.	4	4	3.5	4	3	3.3	-1.0	-0.2	
45	My teacher made sure I had the computer skills I needed to be able to study online.	2	3	2.9	4	4	3.6	1.0	0.7	
29	I need a lot of support with online learning.	2	2	2.7	5	4	3.9	2.0	1.2	
30	You can always find someone to help you online.	2	3	2.9	2	2	2.7	-1.0	-0.2	
31	I found doing tests online gave me useful feedback on how I was doing in the subject.	3	3	3.3	4	4	3.6	1.0	0.3	
32	I don't think online assessment is valid as there is no way of checking who actually does the work.	2	3	2.9	2	2	2.8	-1.0	-0.1	N
33	Being able to do tests online is very important for me.	4	3	3.3	4	3	3.5	0.0	0.2	
34	I didn't get feedback from my assessment in time for it to help my learning.	3	3	2.9	2	2	2.6	-1.0	-0.3	N
35	It's easy to cheat online.	3	3	3.1	4	3	3.3	0.0	0.2	N
36	I am sick of doing all the online tests.	3	3	2.6	2	2	2.5	-1.0	-0.1	N
37	I don't like a computer checking on what work I have done.	2	2	2.6	2	2	2.3	0.0	-0.3	N
38	I found getting into the system really difficult and this put me off learning online.	2	2	2.6	2	2.5	3.0	0.5	0.4	N
39	I got fed up with the course because the web pages took ages to download.	2	2	2.6	2	2	2.8	0.0	0.2	N
40	The technology required for online learning confuses me.	2	2	2.3	2	2	2.7	0.0	0.4	N
41	It was really great to be able to have many pages open at the same time and this helped me learn the subject.	4	4	3.5	4	3	3.2	-1.0	-0.3	
42	I found it easy to get all the required plugins.	3	3	3.3	3	3	3.0	0.0	-0.3	
43	Online links always fail.	2	2	2.5	2	2	1.9	0.0	-0.6	N
46	I had easy access to all the hardware and software I required.	4	4	3.5	4	3	3.3	-1.0	-0.2	
47	I had satisfactory access to the internet.	4	4	3.8	4	4	3.5	0.0	-0.3	
44	I had to learn a lot of computer skills in order to study online.	2	2	2.4	4	2	3.1	0.0	0.7	
20	I like sequential study not flipping all over the place.	4	4	3.8	4	4	3.7	0.0	-0.1	N

Notes:

Mo = Mode (most commonly occurring value); Me = Median (middle value); Av = Average or mean

N indicates negative questions

Gap analysis

A Gap analysis was carried out to determine how the online learning environment was performing compared with student expectations. Each comment requires two responses: how important that aspect of online education is, and how the online unit rates with respect to that aspect. This provides a quantitative measure of the gap between the importance of the different aspects of online education to students and to educators, as well as identifying the standard of the actual online provision.

Eight key statements were put to both the students and the educators. For each statement the respondents had to determine how important this aspect was to them and how their unit rated. Importance was rated as:

1 = Not important

2 = Low importance

3 = Some importance

4 = Important

5 = Very important

while the unit was rated as:

1 = Very low

2 = Low

3 = Medium

4 = High

5 = Very high.

The key statements were concerned with flexibility, communication, support and administration, assessment, technology and access:

- ✧ flexibility to study where, when and how I choose
- ✧ easy communication with my teacher and/or other students
- ✧ support from library, student counsellors or other staff
- ✧ assessment that is fair, reliable and easy to use
- ✧ access to an up-to-date, reliable computer
- ✧ access to up-to-date, reliable software
- ✧ prompt technical help in case of computer problems
- ✧ reliable and affordable internet access.

The responses provide a good indicator in relation to the gap between expectations and actual online delivery as well as providing an insight into the difference between student perspectives and educator perspectives.

Students' perspectives

Gaps are only meaningful for medians and averages, not for the modes.

All these aspects were considered to be very important for students, with the exception of support, which was just important.

Table 22: Students' perspectives (n=333)

Broad area	Importance			Unit rates			Gap	
	Mo	Me	Av	Mo	Me	Av	Me	Av
Flexibility	5	5	4.3	5	4	3.9	1	0.5
Flexibility to study where, when and how I choose								
Communication	5	5	4.4	3	3	3.3	2	1.1
Easy communication with my teacher and/or other students								
Support and administration	4	4	3.6	3	3	2.9	1	0.7
Support from library, student counsellors or other staff								
Assessment	5	5	4.5	4	4	3.5	1	0.9
Assessment that is fair, reliable and easy to use								
Technology and access								
Access to an up-to-date, reliable computer	5	5	4.6	4	4	3.7	1	0.9
Access to up-to-date, reliable software	5	5	4.6	3	4	3.6	1	0.9
Prompt technical help in case of computer problems	5	5	4.4	3	3	3.1	2	1.3
Reliable and affordable internet access	5	5	4.6	3	4	3.5	1	1.1

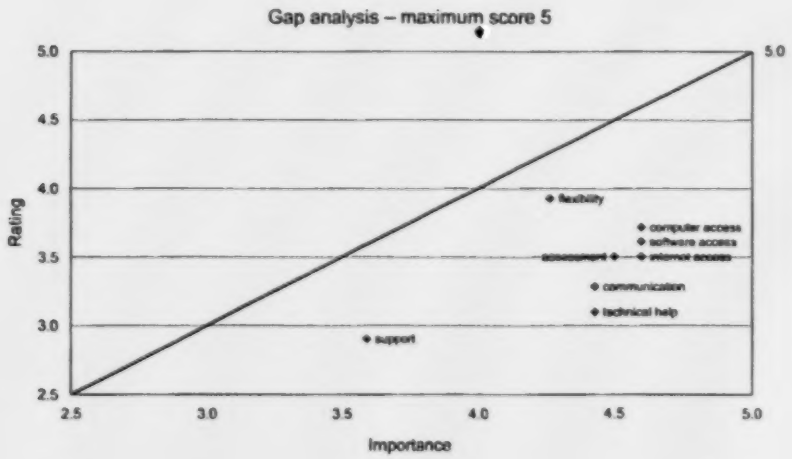
Notes:
Mo = Mode (most commonly occurring value), Me = Median (middle value), Av = Average or mean

The online unit rated between medium and high for all areas, with the exception of flexibility, which was closer to very high. Flexibility has been important for providing quality online learning and this is the area where the flexibility provided was closest to the importance for students. In no areas did the performance exceed the importance to the students.

The largest gap was in prompt technical help in the case of computer problems, where the service provided is of medium standard. Many of us who have been frustrated by the lack of timely and appropriate technical support would be surprised that this area rated as high as medium.

Figure 21 displays the various aspects of online education rated against their importance to students.

Figure 21: Aspects of online education against importance to students



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All aspects rated lower than their importance. While access to computers, software and the internet were the most important, these did not rate as highly as flexibility. The least important aspect for students was support, and this rated the poorest of all the aspects.

Educators' perspectives

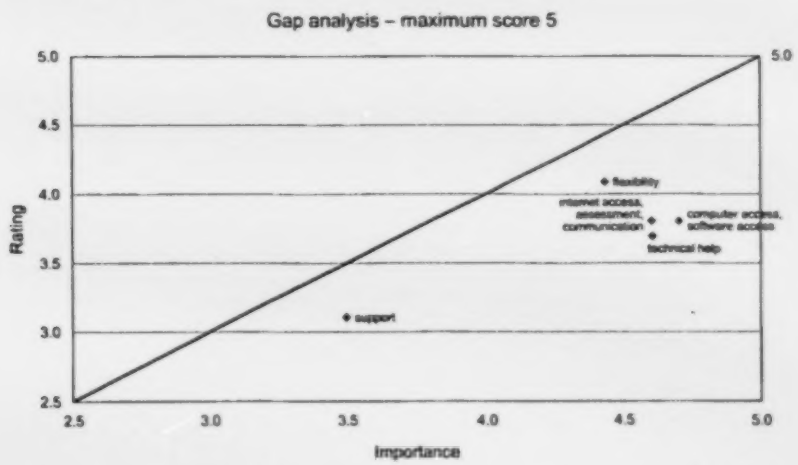
Educators consider everything except support and administration as very important. Support and administration only rate as being of some importance and this area had the smallest gap between importance and how the unit rated along with flexibility. Flexibility is not only important, online education is actually seen to be very flexible. The largest gap was in the technology area where the online units only had a medium performance.

Table 23: Educators' perspectives (n=58)

Broad area	Importance			Unit rates			Gap	
	Mo	Me	Av	Mo	Me	Av	Me	Av
Flexibility								
Flexibility to study where, when and how I choose	5	5	4.4	5	5	4.1	0	0.3
Communication								
Easy communication with my teacher and/or other students	5	5	4.6	4	4	3.8	1	0.8
Support and administration								
Support from library, student counsellors or other staff	5	3	3.5	3	3	3.1	0	0.4
Assessment								
Assessment that is fair, reliable and easy to use	5	5	4.6	4	4	3.8	1	0.8
Technology access								
Access to an up-to-date, reliable computer	5	5	4.7	4	4	3.8	1	0.9
Access to up-to-date, reliable software	5	5	4.7	5	4	3.8	1	0.9
Prompt technical help in case of computer problems	5	5	4.6	5	4	3.7	1	0.9
Reliable and affordable internet access	5	5	4.6	5	4	3.8	1	0.8

Note:
Mo = Mode (most commonly occurring value); Me = Median (middle value); Av = Average or mean

Figure 22: Online ratings against importance of factors for educators



As with the students all aspects of the online medium rated less than its importance to educators. Computer access and software access were the most important with flexibility again rating the

best. Support was the least important and rated the worst, but the educators scored it as more important than did the students.

Differences between students and educators

Table 24: Modes

Broad area	Importance			Unit rates		
	S	E	E-S	S	E	E-S
Flexibility	5	5	0	5	5	0
Flexibility to study where, when and how I choose						
Communication	5	5	0	3	4	1
Easy communication with my teacher and/or other students						
Support and administration	4	5	1	3	3	0
Support from library, student counsellors or other staff						
Assessment	5	5	0	4	4	0
Assessment that is fair reliable and easy to use						
Technology access						
Access to an up-to-date, reliable computer	5	5	0	4	4	0
Access to up-to-date, reliable software	5	5	0	4	5	1
Prompt technical help in case of computer problems	5	5	0	3	5	2
Reliable and affordable internet access	5	5	0	3	5	2

Note:
S = students; E = educators; E-S = difference between educators and students

Differences between students and educators

Table 25: Medians

Broad area	Importance			Unit rates			Gap	
	S	E	E-S	S	E	E-S	Gap S	Gap E
Flexibility	5.0	5.0	0	4.0	5.0	1	1	0
Flexibility to study where, when and how I choose								
Communication	5.0	5.0	0	3.0	4.0	1	2	1
Easy communication with my teacher and/or other students								
Support and administration	4.0	3.0	-1	3.0	3.0	0	1	0
Support from library, student counsellors or other staff								
Assessment	5.0	5.0	0	4.0	4.0	0	1	1
Assessment that is fair reliable and easy to use								
Technology access								
Access to an up-to-date, reliable computer	5.0	5.0	0	4.0	4.0	0	1	1
Access to up-to-date, reliable software	5.0	5.0	0	4.0	4.0	0	1	1
Prompt technical help in case of computer problems	5.0	5.0	0	3.0	4.0	1	2	1
Reliable and affordable internet access	5.0	5.0	0	4.0	4.0	0	1	1

Note:
S = students; E = educators; E-S = difference between educators and students

Table 26: Means

Broad area	Importance			Unit rates			Gap	
	S	E	E-S	S	E	E-S	Gap S	Gap E
Flexibility								
Flexibility to study where, when and how I choose	4.3	4.4	0.1	3.9	4.1	0.2	0.5	0.3
Communication								
Easy communication with my teacher and/or other students	4.4	4.6	0.2	3.3	3.8	0.5	1.1	0.8
Support and administration								
Support from library, student counsellors or other staff	3.6	3.5	-0.1	2.9	3.1	0.2	0.7	0.4
Assessment								
Assessment that is fair reliable and easy to use	4.5	4.6	0.1	3.5	3.8	0.3	0.9	0.8
Technology access								
Access to an up-to-date, reliable computer	4.6	4.7	0.1	3.7	3.8	0.1	0.9	0.9
Access to up-to-date, reliable software	4.6	4.7	0.1	3.6	3.8	0.2	0.9	0.9
Prompt technical help in case of computer problems	4.4	4.6	0.2	3.1	3.7	0.6	1.3	0.9
Reliable and affordable internet access	4.6	4.6	0.0	3.5	3.8	0.3	1.1	0.8

Note:
S = students, E = educators; E-S = difference between educators and students

There is very little difference in the importance that students and educators place on these aspects of online learning. The importance for students was marginally lower in most cases than the importance to educators. Support and administration was the lowest area of importance for both groups. Students generally rated their units lower than the educators did.

Table 27 compares the importance for the two groups: students and educators.

Table 27: Comparison of importance for the two groups

Importance	Students	Educators
1st	Computer access Software access Internet access	Computer access Software access
2nd	Assessment	Assessment Communication Technical help Internet access
3rd	Communication Technical help	Flexibility
4th	Flexibility	Support
5th	Support	

Both groups agreed that the technology comes first, followed in importance by assessment, then communication, flexibility and lastly support.

Table 28: Comparing the rating for the two groups

Rating	Students	Educators
1st	Flexibility	Flexibility
2nd	Computer access	Computer access Software access
3rd	Software access	Assessment Communication Internet access
4th	Assessment Internet access	Technical help
5th	Communication	Support
6th	Technical help	
7th	Support	

Both groups have ranked the units in roughly the same order (technical help and communication are reversed), with the units' performance score higher for the educators than the students.

Appendix 3: Case studies

Seven case studies provide snapshots of current practice in online learning systems in Queensland, Victoria and the Australian Capital Territory as seen by the staff involved. They suggest a range of rationales promoting the development of online delivery and provide some insight into the issues and challenges associated with its management and maintenance.

Case study 1 outlines Victoria's statewide strategy whereby a central platform and online portal is provided for use by registered training organisations (RTOs) in the delivery of online learning to their enrolled students. Case studies 2–7 consider RTO initiatives. The acknowledged rationale guiding online learning development can include a desire to:

- ✧ equip learners with the skills required for participation in a technologically dependent global community
- ✧ enhance communication and access to information within a learning institution
- ✧ improve equity and access for VET learners
- ✧ improve an institution's competitive edge.

While it would be inappropriate to draw conclusions from just seven case studies, they do throw light on management issues such as:

- ✧ funding availability and allocation
- ✧ leading and managing online learning
- ✧ maintaining technical infrastructure
- ✧ inspiring, developing and supporting new roles for staff
- ✧ identifying and improving online pedagogy
- ✧ meeting learner needs and expectations
- ✧ evaluating and improving online delivery.

Resources may be concentrated on professional development for staff (case study 2) or distributed more broadly so that e-learning becomes part of the culture and experience of every enrolled learner (case study 6). E-learning may be part of mixed-mode delivery (case study 7). Enrolment might be done face to face or online and require a cohort of learners to begin or take place at any time. E-learning interaction may be one to one or synchronised (case study 3).

The value of committed leadership and the importance of helping staff meet the challenges of online delivery can be identified in each study.

Case study 1: Developing Victoria's online learning capability—a central perspective

Context

Management of Victoria's TAFE institutes is highly devolved. TAFE institute councils manage their organisations in accordance with ministerial directions, performance and funding agreements and commercial imperatives. The system operates on a training market model, with providers (public and private) competing for market share, government funding and industry clients. Local employment of staff places responsibility for selection, recruitment, industrial relations and professional development in the hands of institute councils.

The state government, while being the owner of the TAFE institute system, has adopted the role of 'purchaser of training' and has devolved to institutes responsibility for developing a response to the training market, for developing their capability and for competing with other institutes (and private providers) within the system. This requirement extends to the adoption of flexible delivery and providing increased access to training.

Informed planning for online learning

In 1995, the Victorian Government determined that a system approach to developing flexible and online learning capabilities was required.

The rapid impact of globalisation and technological change required accelerated development if the system was to effectively meet those challenges. The cost of technology was seen to be beyond the reach of many individual institutes. Devolution and competition provided no incentive for co-operative arrangements that may have transferred learning and achieved economies of scale.

Policy directions have been articulated in three overarching strategies:

- Communications and multimedia strategy (1995)
- TAFE Online (1998)
- Flexible learning strategy (2000).

These strategies have expressed successive government priorities for the development of flexible and online delivery in Victoria's VET sector, and initiatives to develop these capabilities within the TAFE institute system.

The focus has shifted over time, encompassing:

- an initial focus on infrastructure development (in 1994, Victoria was the only state in which TAFE providers were not linked by communications networks)
- improving teacher access to networked computers
- improving teacher skills in the use of online learning technologies
- developing content
- improving student access to learning through online delivery
- improving student skills in learning online.

The development of capability within individual institutes, independently of central support, has remained a consistent objective.

Sustained and committed leadership for online learning

Leadership is evident at two levels:

- ✧ from government, through policy emphasis supported by priority in resource allocation.
- ✧ from institutes, as areas of expertise are developed and as champions emerge to drive online learning in the community. To meet community needs, institutes have also led in areas outside the scope of central policy objectives.

Improving access and success for all clients

Development of infrastructure included the development of the TAFE Virtual Campus (TAFE VC) with the objectives of:

- ✧ giving providers a consistent platform for online delivery where many may not have had the resources to develop their own
- ✧ providing potential clients with a single, consistent and supported, portal to the whole Victorian VET system.

TAFE VC Version 1.1 was launched in October 1998 and was relaunched in May 2000 in its current WebCT-based version. The TAFE VC exists as one element in a policy context designed to improve access and success for all clients. In October 2001, 79 providers are offering approximately 1200 modules of study on the TAFE VC. Some 15 400 students are enrolled and growth rates of about 1000 per month have been reported during 2001. In 1998 and 2000, flexible learning networks were established with the stated purpose of increasing the State Training Service's capacity to provide responsive, quality training through flexible delivery arrangements.

Supporting the needs of online learners

Building on an initial focus on infrastructure development, the current Flexible learning strategy focusses on improving access and supporting the needs of online learners.

Resource allocation to TAFE Frontiers and support for the ANTA Toolbox developments are increasing the range of flexible learning materials for online programs. It is intended that the TAFE VC should address a greater range of learner needs by becoming a portal to a wide range of information. This will assist prospective students to make choices, provide an induction into the technology, link all Victorian TAFE library catalogues, allowing inter-library loans, and provide career information.

Understanding the requirements of the online learner

The Office of Employment, Training and Tertiary Education (ETTE) and most institutes regularly conduct market research and customer satisfaction studies. A major TAFE VC benchmarking study was conducted in May 2000 to test the effectiveness of the TAFE VC against customer and provider needs, and against world trends in online learning.

Effective design, development and implementation of online programs

From a policy perspective, online program development is addressed through initiatives including TAFE VC, TAFE Frontiers, ANTA Toolboxes and other targetted funding. The adoption of online learning and other flexible learning strategies are part of performance agreement and service standards for TAFE institutes and other providers.

Research and evaluation projects have been conducted to identify elements of effective design, development and implementation of online programs. Results identifying best practice are shared across the provider system.

Provision of effective and efficient systems and services

A major focus of the communications and multimedia and of the TAFE online strategies was the development of systems and services from a very low base.

The system approach (as against an individual institute approach) was chosen partly on effectiveness and efficiency grounds: economies of scale became possible; large-scale developments were affordable and system-wide standards and benchmarks for equipment, services, quality and staff professional development were adopted.

Managing and maintaining the technical infrastructure

Technical infrastructure is managed and maintained by ETTE and by institutes. Funding of the infrastructure is shared. ETTE manages contractual arrangements for the ongoing development and support of the TAFE VC, while institutes are responsible for the development and maintenance of their internal communications infrastructures. ETTE is responsible for ensuring that system needs are met through adequate government funds appropriations and for distributing funds to the system against specific guidelines. Institutes meet a significant proportion of costs from self-generated income. A continuing challenge for the system is the increasing cost of providing adequate infrastructure.

Creating confident, committed staff competent in using online technologies

Throughout the three major policy documents listed above, high priority has been given to the role of the teacher in online programs. The approach has often adopted cultural change objectives to establish online delivery as part of the mainstream teaching and learning practice. Throughout, this is recognised as a significant challenge.

Policy implementation has driven and directed government resource allocation. A recent example is the priority given to the provision of laptops to teachers. Provision of a laptop was contingent on staff undertaking specified professional development. Institutes are required to commit significant resources to professional development and staff support.

This area is likely to present further challenges as the drive for efficiency and productivity, and reduced government funding, clash with the additional requirements and pressures that online learning brings to teaching and support staff.

Evaluating for continuous improvement

Victoria is the first state to develop and implement key performance indicators (KPIs) and measures for online learning. These KPIs are designed to measure and report on achievement of the government policy objectives through regular data collection.

While this suite of KPIs has generally met the needs of government, they have not always addressed the concerns or interests of institutes. A more comprehensive communications strategy incorporating many of these KPIs may be beneficial in contextualising the operations of the TAFE VC and address user, staff and institute concerns and expectations.

Case study 2: Acenet

Context

Acenet is a collective of nine providers of adult community education located across central western Melbourne and regional Victoria. It is one of ten learning networks established in Victoria to support the activities of the TAFE Virtual Campus.

The natural constituency of these providers is adults with low literacy and computer literacy skills. A large number of these people are on low incomes, but there is also a section of relatively affluent people looking to study as a leisure activity. Many learners make use of community facilities, but an increasing number have access to the internet at home.

The programs offered vary between providers, but include a range of introductory internet courses, the Certificate of General Education for Adults, small business, genealogy and language programs, in addition to professional development programs for teachers, On-line.Ace and Teaching and learning online (TALON). Some of these are supported on the Victorian TAFE Virtual Campus.

Informed planning for online learning

Acenet providers have insufficient staff who can develop flexible learning resources to cater for these groups, and so they have concentrated on professional development for teachers to introduce them to a range of flexible learning methodologies. These include the use of technology, but also focus on the application of technology in ways suitable for ACE. This tends to incorporate simple rather than sophisticated technical interfaces. ACE teachers need to be able to make use of the basic features of these, and often to support them in the classroom.

With a view to maximising the value of and access to resources, the network is encouraging providers to set up their courses and delivery methods to be available across the network and open to the public, rather than in-house for particular classes. It is looking to develop generic resources, but still retain its focus on access and equity. As part of the funding agreement for Acenet, it provides mentors for its newer offshoot, eLearning Communities, and also for a new learning network based at Kangan Batman Institute of TAFE.

Sustained and committed leadership for online learning

The providers in the network have a strong background in access and equity, but it is necessary to explore additional avenues in order to sustain its viability. The managers are working to encourage 'big-picture' thinking, so that providers can see opportunities presented to them by involvement in VET programs and user-pays activities. Leisure programs form part of a market currently being explored. The presence of managers with a strong background not only in ACE but in technology-supported learning is enabling the network to develop a strong and coherent view of its future directions.

eLearning Communities conducted a skills and infrastructure audit through Acenet to identify who would be the key people involved in their delivery, and what these people would teach. eLearning Communities was planned in the first instance to extend the range of options for learners in existing classes. Now, the possibility of other markets is being considered. There was some resistance to this among teachers who wanted to stay in their existing territory of language, literacy and numeracy, but there was also a good deal of enthusiasm. Like Acenet, eLearning Communities is examining its programs to see how its current activities can be extended to VET and to hobby and leisure courses.

Improving access and success for all clients

The online professional development programs are the principal tools for improving the quality of provision for learners. About 150 people have completed the courses so far. The TALON groups continue to meet regularly, while teachers who completed the other program have mostly continued with online study. Many of the TALON participants presented papers at the Acenet On-line Conference in 2001, and many of the discussions demonstrated a strong understanding of the learning needs of their students, coupled with an enthusiasm for using online techniques creatively.

Supporting the needs of online learners

An advantage of the small size of the organisation is the crossover between the roles of teachers, network managers and administrative support, so that students can generally approach a person who knows about their enrolment and learning issues and technical support needs. The style of support offered depends on the way a particular course is set up and on the preferences of teachers and students, but the personal element dominates. Although the Virtual Campus provides some support mechanisms, students far more often prefer to contact their teacher.

Understanding the requirements of the online learner

One of Acenet's managers, together with the manager of one of the participating providers, took part in a national project aimed at collecting examples of best practice in ACE. None were found, so they examined their own practice. This exercise illuminated the ways in which they support their learners flexibly, according to individual needs.

For example, each TALON group has varied needs regarding both course content and learning preferences. Acenet therefore surveys the students before they embark on their course to find out why they are doing the course and what they want to learn. The course is then tailored to these needs. For example, early groups wanted a general introduction to the range of technologies available for online learning; now, more people know how to use the basic technologies, but understand less about their application. These people need to learn about online pedagogy and what is involved in developing and delivering online programs. They now seek more specialised and task-oriented content, such as how to construct a course using WebCT. Participants are set tasks and may choose to do them in depth or in a more superficial way.

A strong reflective component is evident in the way they learn, so that the groups are starting to identify the needs of online teachers.

Effective design, development and implementation of online programs

In principle, and as far as possible, Acenet will adapt existing courseware and material created by teachers 'on the fly' for cross-network use. As yet, the majority of teachers do not know how to customise this material for online use, so the managers undertake this task. In 2002 however, teachers will learn how to do this as a professional development exercise. Two work teams are to be set up (one for language and literacy, and one for VET programs). Mentor relationships will be established within Acenet, and the aim will be to customise and improve on a piece of courseware and then deliver it online.

The reflective component of the programs, obtained by examining the content-rich postings, provides an evaluative element.

Provision of effective and efficient systems and services

The move to online delivery is proving difficult for some teachers and managers. Some are unwilling to extend their area or activities, while some find it hard to make the shift to online delivery. Interestingly, even some of those who took to online methods as learners have difficulty as centre co-ordinators or managers: they tend to focus on the problems for themselves or their centres, and find that systems and procedures can be unfriendly to online delivery. Nevertheless, these people mostly adapt more easily than those who have done no online study. The latter group may tend to assume barriers for their students, such as predicting that their literacy levels will hinder them from studying online, or that they will not have home computers. In some cases, staff may feel threatened because they think they will need to be more expert in technology than is in fact the case. Generally, Acenet has found that students only become anxious about using technology if the teacher betrays anxiety.

Managing and maintaining the technical infrastructure

All the centres participating in Acenet have good technical systems, partly because of their participation in eLearning Communities. Some traffic jams on the system are now occurring because of the success of the programs offered. Many, but not all students, have internet access at home. All teachers make themselves aware of their students' access and access problems, and the courses allow provision to be made for the different ways in which students will access them. Most centres have a person with responsibility for technical troubleshooting; support is also available from teachers when necessary.

Creating confident, committed staff competent in using online technologies

All Acenet teachers are sessional so they can easily be tempted away to more secure teaching conditions. TALON and On-line.Ace are therefore important as a means of drawing new people into the network. One provider has created a permanent online learning position, whose occupant has contributed to the sustainability of the centre. A need is identified for one or two more people like this in the network, and the managers encourage requests from the providers for upgrades to services and conditions that will improve the quality of teaching and learning. For example, a teacher may be encouraged to co-ordinate and teach across a number of streams where there is less than a full 'class' load in each to ensure a viable rate of payment. They are encouraged to do the work, document it and renegotiate their work agreement.

Evaluating for continuous improvement

Evaluation in this small organisation mostly takes place through continual contact with staff and students, understanding their needs and progress, and acting on what is learned. Effectiveness in the professional development programs is judged by monitoring retention rates, completions, product development during the course, students' own perceptions of success and quality, and continuing demand for the courses.

Case study 3: Box Hill Institute of TAFE

Context

Box Hill Institute of TAFE is a large metropolitan institute in Melbourne. It has been involved in online education for a long time, being one of the first organisations to use electronic delivery before the internet was in common use. The initial programs were conducted in conjunction with Deakin University and involved email communication and remote access to a computer-managed learning system to support delivery and assessment. The whole system was text-based, but generated enough interest among staff to motivate them to learn and expand the system. The institute's extensive involvement has evolved from this early activity.

Sustained and committed leadership for online learning

Senior managers are strongly committed to online education. Part of their commitment was established by ensuring they were familiar with the technology and could use it. They have all been connected to the institute intranet, and to their files and the intranet through home cable access.

The previous director of the institute was the main driver of online education and funded online learning projects which centres could bid for. He also set up an online learning unit built on the original computer-managed learning unit. This unit employs about 10 staff and includes graphic and instructional designers. Each centre has an annual target associated with online learning.

Improving access and success for all clients

For some years, Box Hill's online activities were led by a technological rather than an educational focus. More recently, there has been a determined push to provide students with an engaging portal. Students can obtain access to all their information on or off campus—results, timetables, learning resources and jobs available.

There have been some very interesting projects to provide access for students. One highlight is the 'Learning centre project' that provides online education to patient care attendants in the City of Manningham. Computers for learners in this program have been located in the workplace. The learners are mainly middle-aged female workers from non-English-speaking backgrounds.

Supporting the needs of online learners

The IT infrastructure is constantly providing increased bandwidth so that the students are supported with fast, reliable technology. The present bandwidth is enough to enable most students to get access at one time. The majority of the delivery online is through a multi-modal approach that helps students gain access to information and facilitates communication, student to student and student to teacher. This can happen synchronously and provides a facility to harness support.

Understanding the requirements of the online learner

Our understanding of online learners keeps improving as there are more learners engaged online and as organisations review their online delivery. The biggest challenge at Box Hill was for teachers to learn how to develop a relationship with a student on email that helped to motivate perseverance with study. A topic under investigation at present is the use of synchronous tutorials, in comparison with asynchronous methods.

Ways of presenting online resources that engage and maintain the student's interest are also under investigation. Anatomy and physiology, for example, is a subject that can be dull if it is not accompanied by real dissections. Such dissections are not possible in a TAFE institute but the online resources can include simulations accompanied by a variety of activities to appeal to students.

Effective design, development and implementation of online programs

Toolbox projects have been instrumental in providing some good opportunities and stretch targets for effective design and development of online materials. Box Hill Institute is at present developing its third Toolbox project.

Provision of effective and efficient systems and services

Some, but not all student systems are available online. There is no online enrolment, but students do have their own online 'Student World' that serves as an individual portal providing access to student records, timetables, the library and jobs available.

Managing and maintaining the technical infrastructure

The technical infrastructure is the responsibility of a general manager. His enthusiasm and attention have ensured that maintenance and support are provided. But obtaining adequate funding is still a challenge—and this determines the bandwidth available and the frequency with which the IT infrastructure can be updated.

Creating confident, committed staff competent in using online technologies

Staff have become familiar and confident with the online environment through a range of strategies. All staff have a computer on their desk and the Office of Employment, Training and Tertiary Education 'laptops for teachers' initiative has made a very significant difference. All staff are expected to use Microsoft Outlook for email, their diary and booking meetings. There is a large internal intranet providing information of the strategic plan, policies and procedures, minutes of meetings, positions vacant and information about any activities such as the teaching and learning conference.

Case study 4: Canberra Institute of Technology

Context

Canberra Institute of Technology (CIT) is in a unique position as the sole TAFE provider in the ACT. It is also fortunate in that one dean of faculty is a member of the national Flexible Learning Advisory Group so is closely associated with the Australian Flexible Learning Framework.

Informed planning for online learning

The institute has a Flexible Learning Committee that has produced a flexible learning operational plan. Online teaching and learning is central to the plan and is recognised as one form of flexible learning. The plan, which aligns with the Australian Flexible Learning Framework, defines four target areas for action in 2001:

- quality learning resources
- comprehensive student support
- supportive infrastructure
- creative, capable staff.

Sustained and committed leadership for online learning

Leadership is provided by the members of the Flexible Learning Committee with its local knowledge and close connection to national directions.

Supporting the needs of online learners

An online student support centre is to be developed, including links to career advice, course information, information technology and information literacy skills, student administration services, academic support, library, frequently asked questions and IT support.

Online communication is to be developed as the preferred method of non-face-to-face interaction between students and CIT staff. Online library registration is to be available under the new library system.

Effective design, development and implementation of online programs

A priority has been established for extending the use of WebCT for module delivery, and also for the further use of ANTA Toolboxes. The use of templates and style guides for development is to be extended, and further subject web pages are to be developed.

Managing and maintaining the technical infrastructure

Teachers recognise that technology access, workability and support are vital for online learning.

In recent years, problems have been experienced with the speed and reliability of the institute network; students and staff have been frustrated by frequent downtimes and slow connections. Improvements have already been made to the speed of access and more are planned.

It is intended to make internet access available to students at half the current cost. WebCT has been selected as the institute online platform. Chat and Whyteboard facilities have been added to this.

Creating confident, committed staff competent in using online technologies

Online teachers at CIT exhibit enormous enthusiasm for their work but, as in other organisations, many find that it is an unrecognised add-on to their load. A working group has been set up to examine teaching loads associated with the use of new learning technologies.

A survey of professional development needs is to be undertaken. Staff development activities will include an institute-wide action learning project. Emphasis is placed on the investigation and dissemination of information on flexible learning and best practice.

Case study 5: Southbank Institute of TAFE

Context

Online learning at Southbank takes place both through TAFE Queensland On-line and through four eLearn centres. The eLearn centres are at present offering a number of units of study, such as core computing units and units on subjects such as conflict resolution, negotiation skills and report writing. 'E-packs' are in preparation for further courses.

Three of the four eLearn centres are situated in libraries. (The fourth cannot be accommodated in this way because of lack of space.) Southbank considers this a successful model. The aim has been to position eLearn centres as part of an educational unit so that staff would see them as a resource that would support them in trying out online services and in considering new initiatives they might put in place.

Liaison librarians are a crucial means of promoting eLearn. They have undertaken a multimedia course so they can act as a non-threatening sounding board for teachers and they make their support available and visible by going out to faculties (NET*Working 2000, Warman 2001).

The principal driver for the push to online at Southbank is the need to attract and retain students who might otherwise be tempted to enrol elsewhere.

Informed planning for online learning

Implementation of online delivery is being incorporated into teaching and other activities by means of workforce, team and individual development plans, a process that started in 2000 and is continuing. An online strategy has been developed for the institute, with 18 tasks identified for completion. These tasks include:

- orientation of managers, teachers and tutors to their changing roles in online learning, by means of an induction process which will eventually be available online. The use of mentors is seen as desirable. Along with orientation come issues relating to teachers' work
- orientation of learners to the changing nature of learning in online programs. Again, the use of mentor support will be considered
- establishment of a steering group for the online strategy in the same way as was done for the internet strategy plan
- market research to improve understanding of potential target groups and their needs; the open learning network will need to be expanded to all educational units for this purpose
- quality assurance for the online learner
- establishment of an online help desk for staff and students (seen as a role that will grow over time)
- targetting a percentage of fee-for-service revenue for online development
- development of a package of online funding models, enabling teams to track the costs of different learning approaches.

Online learning is positioned within the institute in four ways:

- in the institute's internet and intranet strategy, which presents its public face to the world
- in the online strategy plan

- in the educational strategy plans of faculties and educational units, which are required to incorporate elements of the online strategy plan and which are responsible for increasing the volume of online delivery
- in the Learning Technologies Plan which supports these strategies.

Sustained and committed leadership for online learning

eLearn co-ordinators may be teachers or other categories of staff, targetted and invited to take on the role. At present, this function is taken on voluntarily with no allowance in the workload. Among the benefits is a holistic view of the way in which job roles are changing. This view develops through a quasi action-learning process. Co-ordinators are asked to prepare a bi-monthly report on what they have done, barriers they have encountered, issues arising and what they plan to do in the following two months. This process is currently being put in place. The intention is that these reports will be presented to the online steering group that will then contribute to a decision at institute level on how the agreed 18 tasks can be managed within current roles. For this reason, it is seen as essential that the institute chief executive officer and senior managers should support these developments. Such support is already present, but it is intended that the communication process will be repeated to increase understanding and bed down support more firmly.

Improving access and success for all clients

The question whether online learning has improved access and success for learners is yet to be answered, as online delivery is still so new to the institute. At present, online learners (enrolled through TAFE Queensland On-line) and face-to-face learners (enrolled through Southbank) are categorised separately; face-to-face students may or may not know that the online option is available to them. eLearn students enrol directly through Southbank.

Understanding the requirements of the online learner

Students are allocated a support facilitator whom they can contact by email or phone, or face to face in the eLearn centre. The facilitator is required to contact each student shortly after enrolment. Enrolment can be done at any time, but consideration is being given to having enrolments every two weeks so there is a learning peer group.

Web board discussion is available, but does not yet have a high volume of usage. It may be structured into the learning program. A difficulty for staff (apparently not identified by students) is that 'anytime' enrolment means students are all at different stages.

Effective design, development and implementation of online programs

Modules offered include a four-week module on eLearn Centre usage. Students are also offered a unit on operating computer hardware to provide them with basic computer competencies. Students are encouraged to visit an eLearn Centre so that staff can help them decide which modules to enrol in and assist them with the enrolment process.

Case study 6: Swinburne University of Technology, TAFE Division

Context

Swinburne Institute of Technology, TAFE Division (Swinburne TAFE) is part of a large multi-sector university in metropolitan Melbourne. It is a traditional bricks-and-mortar institute with six campuses stretching from inner Melbourne to the outer eastern region at Healesville in the Yarra Ranges. Swinburne TAFE is one of the largest VET providers in Victoria and it has had a long involvement with online education through the development of online resources, trials of different online communication systems and staff development.

While there is a small amount of distance education delivery through the online medium, the main involvement with online education is through flexible delivery in a hybrid or blended delivery mode.

Informed planning for online learning

The TAFE Division of Swinburne University of Technology has developed a vision of appropriate e-learning for all students.

> All students will have excellent e-le: ning experiences to enhance their learning, employment and life opportunities to equip them for working and living in the global community and the technological world.

The critical element of the vision is that teachers will be competent and confident enough to choose the best use of the information communication technologies (ICTs) to facilitate these e-learning experiences and to ensure the online experience is appropriate for each particular group of students.

The development of a change management plan to support this vision was carried out by two senior executives as part of an ANTA Flexible Learning Fellowship and is now being implemented in the division. The plan provides a blueprint for implementing a pedagogically sound approach for the use of online technologies in a traditional bricks-and-mortar organisation to embed e-learning as part of the culture and of every student's learning experience.

The e-learning@swinburne Plan was endorsed and supported by the full executive team. This provided leadership for the vision that would reach all teachers and a plan that reached the essence of all education—student learning. The plan is part of the teaching and learning strategy for the division and has been embedded into the strategic plan for the division to ensure its sustainability. Each department in the division has developed an action plan that ensures there are actions and measurable outcomes against the e-learning@swinburne Plan.

Sustained and committed leadership for online learning

The TAFE Executive Group has actively supported online education. This is demonstrated through the strategic plan for the division, the teaching and learning strategy and the e-learning@Swinburne Plan. The division also maintains the Customised Training and Development Unit, which provides support for online education initiatives and online teaching to all departments and units within the division.

Improving access and success for all clients

Students using online delivery for study at Swinburne have been overwhelmingly enthusiastic about the flexibility and improved access it provides. This flexibility improves access to resources

and access to courses. However, this flexibility is not available in all areas or in all courses. While the e-learning plan aims to have all students experiencing e-learning, it must be an appropriate medium for the specific group of students. Improving success for many students involves a supported classroom environment and a slow introduction to learning online.

Courses are available both through the Swinburne website and through the TAFE VC. This provides students with more options and greater access.

Supporting the needs of online learners

VET students need a supported introduction to online learning. This is provided in many cases through a blended delivery model where students are introduced to online learning with the support of the teacher in a face-to-face classroom situation. As the students become more confident and more independent in their learning, they are able to utilise the full flexibility of the online resources.

While Swinburne does not have a computer commons, there are computer rooms available for general access. In addition, the library on each campus has open access computers available for student use and the library staff are trained to help students with their online learning. All students have a Swinburne email account and are able to email their teachers.

Online learners are supported by online links to the library, have chat room discussion and email communication. The library has set up portals for different study areas providing a wealth of links to different resources. One advantage of a multi-sector university is the excellent library facilities, with online resources including electronic databases and electronic journals.

General institute and course information is available online and students can apply for courses online. However, online enrolment is not yet possible. The university policies and procedures are available online.

Understanding the requirements of the online learner

The vision of the e-learning@Swinburne Plan is that all students at Swinburne will have excellent and appropriate online learning experiences. Central to this plan is the teacher who will determine the most appropriate use of the online technologies for each group of students. Teachers are best able to understand the needs of their students and can provide the supportive environment to help them learn online. VET students are not independent learners and need help to manage their own learning.

This research is providing useful data to understand better the requirements of the online learners at Swinburne.

Effective design, development and implementation of online programs

Enthusiasm for online education was initially established at Swinburne TAFE through online development projects. Two projects were won in the first round of the Office of Training and Tertiary Education-funded projects: Wake up to online—online content in mathematics and renewable energy—and Business online. Further work has been done within Victoria through additional Office of Training and Tertiary Education-funded projects, through those funded by TAFE Frontiers as well as national ANTA and Toolbox projects. Every school in the division has been involved in at least one development project, with some areas having multiple projects. At this stage, every department would have had some activity with online learning

Provision of effective and efficient systems and services

At this stage, Swinburne TAFE does not have an e-business environment supporting its online learning. The e-learning@swinburne Plan details steps required to move in this direction, but there is still a lot of work to be done. Course information, applications and student results are available online. However enrolments still need to be done face to face or, in the case of distance education, they are sent in and supported by staff, not electronically, at the other end.

Managing and maintaining the technical infrastructure

SITES is Swinburne University's statement of directions for information and communication technologies. It provides the overarching policy with regard to ICTs in the university and can be found at www.its.swin.edu.au/about_us/its_directorate/no2/index.htm

Technical infrastructure is being updated to provide a faster more reliable network. The strategy provides for:

- ✧ server and cabling upgrade
- ✧ increased communication capability both externally to the university and between campuses
- ✧ personal computer (PC) upgrades in classrooms.

The desktop strategy aims to replace and upgrade staff computers progressively on a three-year replacement cycle while the classroom strategy ensures that the PCs for student use are upgraded. This is providing the opportunity to move older computers into general purpose classrooms with connections to the internet to integrate online learning into regular classes.

Creating confident, committed staff competent in using online technologies

Professional development, professional development and more professional development are the essential ingredients in helping staff become confident and capable at using the online medium! This has been achieved in two ways at Swinburne TAFE.

The Customised Training Development Unit is a small unit which supports staff in the use of the information communication technologies. This unit works in a matrix arrangement across the division, providing mentor support, setting up peer networks and providing 'just-in-time', 'just enough' and 'just-for-me' training in the use of the ICTs.

Use of ICTs is a key platform in the TAFE Division's professional development plan. Staff are provided with both time release and mentor support to undertake action learning projects using the online medium. National LearnScope funding is divided evenly amongst the schools in the division and, in many cases, each department is funded for an online project. This funding is small, but is enough to provide an incentive for staff to become involved.

The Office of Training and Tertiary Education has provided laptops for teachers. In Swinburne's case there have been 250 laptops given to teachers to help them use the online medium in their teaching strategies. One of the conditions of receiving a lap-top is agreeing to participate in professional development on how to use the laptop in providing online education for the students.

Evaluating for continuous improvement

Online education has been embedded into the standard procedures within the TAFE Division of Swinburne. The division has ISO certification and will meet all requirements of the Australian

Qualifications Training Framework. Course evaluation occurs through the quality system and online delivery is part of this evaluation. Staff and students evaluate all modules regularly and this review process leads to ongoing improvement. Service standards, technical support and help desk services are regularly monitored through the university, which is now subject to the Australian Universities Quality Agency audit process.

Students using the ICTs at Swinburne participated in this study and provided interesting and valuable feedback.

The introduction of a new online resource or online teaching strategy is subject to additional evaluation. One of the best examples of this is within the Youth Literacy Program where the students were involved with the development of the online resource, Be your own boss. The students were on the development reference committee. They tested the product before release and have used it extensively in class. Their feedback resulted in ongoing improvements and has ensured the success of the product. This method of development is being used again in the development of the next resource, Out there.

Case study 7: Tropical North Queensland Institute of TAFE

Context

Tropical North Queensland Institute of TAFE has eight campuses, at Cairns, Innisfail, Tully, Atherton, Mareeba, Mossman, Thursday Island and Bamaga.

Among the online programs offered are IT programs, marine certificates, language and literacy programs and Teaching and learning online. RATEP (a community-based Aboriginal and Torres Strait Islander Teacher Education Program) is offered on Cape York and Thursday Island by the Faculty for Aboriginal and Torres Strait Island Studies.

Informed planning for online learning

The institute has a strategy plan for flexible delivery, including online delivery. The staff member responsible for developing this strategy is a driving force for online development in the institute. She emphasises the need to engage managers and other staff as well as teaching staff.

The institute's strategic approach has been to begin by identifying delivery areas where a degree of interest exists among the staff, and where there is a discernible potential for online delivery. Teams and individuals are targetted for initiatives, nurturing their skills and building skills gradually, so as not to overwhelm or alarm the staff involved.

A strong factor in pushing ahead with online delivery is that Indigenous communities want to engage with technology and the institute would be doing them a disservice if it failed to provide for this demand. The institute's competitive focus requires it to take part in outback digital networking activities under the 'Networking the nation' initiative, in conjunction with other government departments. The Queensland Government's Smartstate initiative has been very helpful in that it has greatly increased awareness of technology.

The institute recognises that a key factor in the progress of online delivery is the issue of teacher loads. Teachers are required to take release time to undertake online development, rather than undertaking it as an unrecognised extra duty. The institute has devised a form of agreement with teachers which provides that funds freed by their release for development are used to provide backfill for their duties.

Sustained and committed leadership for online learning

Senior staff at the institute exhibit a mixture of views about online learning, ranging from strongly positive, through lukewarm to one or two who are not supportive of this direction.

In the current economic climate, ensuring a satisfactory budget position is the highest priority, and views differ as to whether online delivery will help to achieve this. Although there is a view that online delivery will assist the institute's competitive edge, no clear position has been formed about this.

Improving access and success for all clients

Access centres with computers and teaching support are available, associated with libraries, where facilities (including access to internet service providers) allow. Students can use these at any time when the facility is open. The access centre on the Cairns Campus has been set up as a flexible learning centre, jointly funded by all the faculties. Those who have used it are supportive, but those who have not are less so. A need is seen for a real sense of common ownership of facilities such as this.

Supporting the needs of online learners

The support for learners is course-dependent and varies according to the enthusiasm and capability of the teachers in those areas. Monthly workshops are held for IT courses, which students can attend as frequently or infrequently as they choose. Full-time face-to-face students can access assignments and other materials from the website from home. These arrangements are of benefit to students from different backgrounds and with differing IT skills.

Some IT students (including one with a learning disability) appreciated the visual aspects of the web delivery. Frustrations were experienced when technical problems arose, such as the network being down or the connection slow.

During 2000, a LearnScope project was used to develop a program for volunteer tutors in literacy and English as a second language. It includes a web-based text component, web board discussion (with a requirement to post responses), and online induction. Students can phone in for help, but some apparently think that, because they are enrolled as online students, they must only use online services. Online enrolment is not available for students.

Teachers' work

From the teacher's point of view, being able to work at home is a positive factor, but a negative aspect is that teaching online requires more work, and the demand does not stop during holiday periods with students expecting that the teacher will be constantly available. This style of teaching was described as 'a labour of love'.

Understanding the requirements of the online learner

The institute recognises that not everyone is ready for online learning, and there is sometimes a degree of resistance. It is therefore moving towards mixed-mode delivery and cohort (rather than anytime) enrolment, to produce a sense of community among students and reduce the isolation of the independent learner.

A problem arises from this policy because TAFE Queensland On-line operates totally online and does not cater for mixed-mode study.

Effective design, development and implementation of online programs

Web-based learning materials, web discussion and synchronous chat are used in various combinations, some also in combination with face-to-face teaching. The online media may be used on campus or elsewhere. Many of the programs cater for mixed ability groups.

For many students, a supportive relationship with the teacher is an important part of the program. There is a view that online students working at a distance need to be strongly motivated and organised.

Managing and maintaining the technical infrastructure

A problem experienced by both students and staff is slow response on the network. This is caused by insufficient bandwidth both on the institute network and on the internet service to northern Queensland.

Creating confident, committed staff competent in using online technologies

There is a strong emphasis on professional development, where possible harnessing funds from LearnScope, Framing the Future and other initiatives to engage and develop staff. These are seen to be very beneficial, and a particular advantage has been having a flexible learning leader on staff.

This is certainly having results in some areas at least; for example, one teacher who two years ago didn't see how the web could be used for delivery now has three hundred students. In another program, a teacher who until recently knew little about the internet is now using technologies such as integrated video streaming.

These teachers are now encouraging others, and the institute is trying to create ways in which teachers can teach each other, such as sitting in on one another's chat session. But this can be difficult for staff who are already fully loaded.

The institute is considering a number of questions related to directions for developing staff with online capability, including the following:

- Do you have to be a good class teacher to be a good online teacher?
- How do you make sure that it is not the teachers who are not successful in class teaching who are moved into online programs?
- How best do you nurture the development of online capability?
- How do you reward those who contribute to the online development?

Appendix 4: Issues relating to research project

Project issues

A number of procedural problems occurred which contributed to delays in completion of the project. These are outlined here so that future researchers and project managers can consider ways to overcome them.

It has proved difficult to obtain the agreement of educational organisations to participate in either the survey or the case studies. The researchers consider that there are two principal causes of this problem.

In the first place, many organisations do not have a staff member designated to co-ordinate responses to requests to participate in research, and so such requests fall on the shoulders of staff members who are already fully loaded; sometimes they simply get lost in the organisation.

In the second place, the large-scale investment in national and state initiatives designed to promote the implementation of flexible and online learning has resulted in a large number of research projects and surveys. While organisations are in many cases interested in and supportive of these initiatives, the burden of responding to them has been enormous for both staff and students, and the researchers in this project found that there was resistance to asking people to take part in 'yet another' survey.

The approach to organisations through formal channels is necessarily slow, and nominations of organisations were only received in December 2000, some months later than expected. It is very difficult for organisations to respond to requests in December, and impossible to carry out research involving students and educators at this time. The timing of the requests was a contributing factor to the number of negative responses received. In the end, the researchers used their personal networks to obtain participation. This is one reason why the response rate to the surveys is not consistent across states and territories.

The best time to obtain student responses is from the middle to the end of a semester, and input from students was received mainly from April to June and again from August to October 2001.

The researchers suggest that project timetables should recognise the length of time required to organise surveys and case studies, and ensure that requests are made and data gathered at times that suit the organisations concerned.

They further suggest that central co-ordination of all national projects involving data collection would be of benefit, so that the burden of participation can be spread more equitably across VET organisations and that such organisations may be able to predict when and how they will be asked to participate.

Survey issues

The chief medium of this study is the online questionnaire. The medium ensures the questionnaire is accessible to all students and educators studying online at organisations linked to the instrument. It is relatively straightforward (about five minutes work) to establish the link, but it does require a person with the technical ability to do so. Organisations have been very willing to carry out this task, but the action is often delayed because staff are already fully loaded.

Online questionnaires have the advantage of eliminating paper, postage and transcription. The data go automatically into an online database. Many organisations have indicated interest in persuading their students to respond in exchange for their data at the end of the study. The researchers have agreed to send organisations the data pertaining to them, after deleting all personal identifiers according to ethics requirements.

Interviewing students directly has been problematic. Arrangements with groups of students have fallen through or students have just failed to show up at the arranged time and place. Insufficient numbers of face-to-face interviews have been conducted for analysis, although comments made have been included where appropriate. On a happier note, staff interviews have been wonderful. Without exception they have been exciting, dynamic occasions providing a rich source of data.

It has been noted elsewhere in this report that the use of online questionnaires may limit the population which has been sampled. It has been identified as important to seek the views of those students who are unsuccessful or less than happy in their online programs. However, reaching students who have dropped out of their programs, or who did not get as far as enrolling, is beyond the scope of the present project. The researchers recognise that surveying only those who volunteer to complete an online survey is likely to bias the study towards those who have positive views about online learning.

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